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HEALTH CARE

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1 P R O C E E D I N G S

2 DR. KAUSHAL: First of all, good  
3 afternoon. My name is Dr. Mohit Kaushal. Thank  
4 you very much for coming here today. It's a  
5 pleasure to welcome you all at the Health Care  
6 Workshop.

7 Before we get started, I want to give  
8 you some brief context of the afternoon. This  
9 workshop is one of about 30 that the FCC is  
10 hosting to support the development of a National  
11 Broadband Plan which due to Congress very soon at  
12 the end of February, so this is why Erik and I are  
13 looking at little bit tired. A key component of  
14 the plan is something that we're calling National  
15 Purposes which essentially is how broadband  
16 infrastructure and applications can help further  
17 the country's priorities. Our work falls into six  
18 main categories, health care, education, energy  
19 and the environment, economic opportunity,  
20 government operations and public safety.

21 Today's workshop is focused on health  
22 care, and I think no one would argue that health

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1 care is a real major priority right now in the  
2 country. Our work is to define the ways in which  
3 broadband can support the delivery of high-quality  
4 and cost-effective care. The interface of  
5 connectivity, technology and health care is a very  
6 interesting one and the potential benefits are  
7 pretty enormous. Whether we're considering cloud  
8 computing VHR, interoperability or even home  
9 remote monitoring, the key backbone to all of  
10 these very exciting applications is good quality  
11 and widely disseminated connectivity. This is  
12 obviously a major focus for the FCC.

13 A quick word about my background. I  
14 only joined last week to lead the health care  
15 effort on the broadband team. By background I am  
16 a physician. After clinical training I went into  
17 the so-called dark side and I've been working in  
18 early stage health care start-ups as well as most  
19 recently in venture capital in Boston. I think it  
20 was really there that I got very passionate about  
21 this interface and convergence of digital media  
22 and health care.

1           This afternoon I'm very pleased to have  
2       two very interesting panels to help us go into  
3       some of the topics. Each panelist is going to  
4       have about 5 minutes to give a brief presentation,  
5       and then after each panel the FCC panel can ask  
6       some questions and we're also going to open it up  
7       to you guys and people on the Web.

8           Let's go into the topic. The first one  
9       is really going to delve into broadband and  
10      deployment and we wish to explore the situation  
11      with respect to, number one, What is the state of  
12      current connectivity of health care providers both  
13      in urban areas and rural areas? The second part  
14      of that is where there is connectivity, Is the  
15      quality good enough to support the applications we  
16      have here today but also looking at 5 to 10 years  
17      down the line? We're also going to briefly  
18      discuss the existing FCC Rural Pilot Program, and  
19      then finally the path forward in terms of further  
20      funding programs.

21           Our second panel is going to focus on  
22      investment and usage and we want to delve deeper

1       into how the federal government can be utilized to  
2       spur further investment into telemedicine.

3       Secondly, we'd like to discuss the real barriers  
4       that we have right now in terms of adoption of  
5       telemedicine.

6               Without further ado, I'd like to  
7       introduce the FCC panelists and then the panelists  
8       to myself. To my left is Erik Garr who is the  
9       General Manager of the National Broadband Plan,  
10      and over there we have Ernesto Beckford who is the  
11      Attorney Adviser for the Telecommunications Access  
12      Division, and he has a real focus and expertise  
13      within the FCC's Rural Health Care Pilot Program.  
14      Finally, thank you all very much to all the FCC  
15      team to helped put this on. Ernesto and Tom  
16      Buckley who unfortunately is not here today have  
17      done a great job. Thank you.

18             First of all I'd like to introduce Doug  
19      Van Houweling. Thank you very much for coming  
20      here today. Maybe if you'd give us one second on  
21      Internet2 where you're the president and CEO and  
22      then do your presentation, please.

1                   MR. HOUWELING: I'm delighted to be here  
2           to have a chance to talk to all of you about this  
3           very important issue this afternoon. It's been a  
4           key effort of Internet2 which is a not-for-profit  
5           organization that provides very high-performance  
6           networking capabilities to universities and  
7           research organizations across the United States  
8           and connects them with folks all over the world.

9                   Internet2 has been a pioneer in  
10          developing really high bandwidth capabilities in  
11          advance of the marketplace, and as a result, we've  
12          been very much involved in our work with the FCC  
13          in the early conceptualization and then the  
14          deployment of the pilot program that the FCC is  
15          currently involved in.

16                  This in fact is a map of the Internet2  
17          backbone infrastructure and all of the places  
18          where we have been working with regional  
19          organizations to provide support for rural health  
20          care networking. In fact, something that we don't  
21          always remember is that the higher-education  
22          community works so closely with the major academic



1 medical centers, and the academic medical colleges  
2 across the United States, almost all of them,  
3 actually are involved as members of Internet2, and  
4 we also have a number of affiliate members who are  
5 members of Internet2, the NIH, the National  
6 Library of Medicine, the Veterans Administration,  
7 the Howard Hughes Medical Institute, so we already  
8 provide a lot of infrastructural capabilities to  
9 the leading edge of the health care environment.  
10 What we've learned as we've gone through that is  
11 the need for high bandwidth is being driven by the  
12 science and practice of health care because the  
13 amount of biological data worldwide continues to  
14 expand at an exponential rate.

15           If you actually think about this, what  
16 we're doing in medical science is we're  
17 increasingly able to go to deeper and deeper  
18 levels of the organism to understand how it  
19 actually responds to disease challenges, and as we  
20 do that, we wind up collecting data at all of  
21 those levels. So when we used to think about just  
22 information on organs, the amount of data that we

1 had to deal with was relatively modest, but as  
2 we're now working at the level of proteins and the  
3 constituents of proteins, we're going much  
4 further. Furthermore, as we move forward, each  
5 brain also represents an enormous amount of data  
6 and as we do brain scans we're moving into an  
7 environment where we're having a very hard time  
8 moving the data that we need.

9           When we think about image studies and  
10 making them available, you can see that T-1  
11 networking just doesn't cut it. It takes an hour  
12 to move an image study using a T-1 network. The  
13 kind of network speeds that we typically use at  
14 Internet2 of a gigabit per second allow us to move  
15 these data sets in a few seconds. And let me tell  
16 you that if you're in an emergency medical  
17 situation and you need an image moved, you don't  
18 want to wait a long time.

19           Another application is in medical  
20 education. You see a picture of how people have  
21 traditionally learned about medical procedures.  
22 Here's today's version. Every one of these

1       medical persons is wearing a camera on their head  
2       and it turns out that the students who are seeing  
3       it remotely through the Internet-supported video  
4       are seeing more than the students that are in the  
5       gallery. Telepresence has become therefore a very  
6       important resource for medical education and  
7       medical practice. As you look at the amount of  
8       bandwidth that's required by the various vendors,  
9       you're once again up in the 5 to 10 megabit range  
10      for each participant. So if you've got 20  
11      participants, you're all of a sudden up in the 100  
12      megabit and above range for telepresence.

13               We're using telepresence not only for  
14      education but also for practice. Here is a  
15      picture of a physician's assistant remote from a  
16      hospital in Ohio working with the physician to  
17      evaluate the health of a young child. In Ohio  
18      there are now three different nodes that are  
19      connected to the Nationwide Children's Hospital,  
20      and once again we're working with multimegabit  
21      connections in order to enable the video  
22      conferencing. This is a great story. What has

1       happened is that with these remote clinics we are  
2       having in Ohio to transport fewer children from  
3       their home health care environment to the  
4       intensive-care facilities and reducing costs,  
5       increasing the quality of care they get because  
6       the physicians at the center at the Children's  
7       Hospital are better to evaluate children's needs  
8       remotely using this technology.

9               Internet2 has been focused on trying to  
10       see if we can't all work together to build a  
11       nationwide health network which at first connects  
12       more than six-thousand hospitals, almost  
13       four-thousand rural clinics, more than a thousand  
14       federally qualified health centers, and we think  
15       it's critical because it provides for support of  
16       research, medical education and clinical care.

17              But this goes beyond just connecting  
18       doctors in their medical care facilities to  
19       patients at other medical care facilities. We  
20       honestly think that if we pursue this effort  
21       carefully, we can start delivering these  
22       capabilities into the home. One of the uses that

1 we foresee is having in this instance a mother  
2 consulting with a doctor and a grandmother all  
3 located in different places by three-way  
4 DVD-quality video conferencing and health care  
5 monitoring tools where the grandmother is so that  
6 we could have still a family assisted capability  
7 to provide for health care for our elderly. I  
8 have to tell you that I would love to have that  
9 kind of capability in support of my own dad who I  
10 can't be with when they go to the doctor, but he  
11 would love to have me be there and I know the  
12 doctor would like to have me be there. I think  
13 that this is within our reach if we can deploy  
14 these technologies. Thank you very much.

15 DR. KAUSHAL: Thank you very much. Our  
16 next panelist is Scot Eberle who is the COO of  
17 FiberUtilities Group.

18 MR. EBERLE: Thank you. It's a pleasure  
19 to be here and I'm glad to participate in the  
20 panel.

21 Let me tell you a little bit about  
22 FiberUtilities Group. We are a group that's based

1 in the Midwest. We are a private company that  
2 focuses on technology management for private  
3 enterprises. That might sound a little odd, and  
4 what is that? In the simplest sense, I've got a  
5 firm that's full of a bunch of industry folks,  
6 myself with 25 years on the carrier side of the  
7 business. I've got partners that have been in the  
8 cable business, the wireless business, the LD  
9 business, the CLEC business, so there's a lot of  
10 industry experience within our firm. The focus of  
11 our firm has been to identify opportunities for  
12 our clients to what we describe as next-generation  
13 networks, and I'll describe that in just a second  
  
14 here. Today we manage about 8,000 miles of  
15 network across primarily the Midwest and we've  
16 been focused within the pilot program and have got  
17 what I would call successful programs moving  
18 forward through the process with USAC and the FCC.  
19 Some of the drivers behind why these  
20 networks are important, and Doug has hit on it and  
21 I'm sure every panelist is going to talk about,  
22 but what we've seen from a client standpoint, the

1 driver is behind broadband. From the technology  
2 side, the PACs and the imaging requirements, and  
3 it doesn't really matter on the geography, you can  
4 be in a metro market or you can be in a rural  
5 market, the ability to move information at the  
6 price and at the right speed is critical, and  
7 we've seen a bit change on that on the gear side,  
8 a lot more capacity is there, so the limiting  
9 factor continues to be as Doug said on the network  
10 side of it.

11 Storage requirements for the hospitals  
12 and for the physicians to have the records and  
13 information at the right place and being able to  
14 get at it at the right time is a critical side it,  
15 and all the records and HIT initiatives that are  
16 happening, that convergence of all of those needs  
17 really drive into the broadband side, and I'm  
18 going to cite a couple examples of clients,  
19 limited capacity within existing infrastructure,  
20 the ability to not move that infrastructure much  
21 larger in order to get the right kind of  
22 connectivity, cost pressures within the

1 enterprises, their ability to go buy the right  
2 kind of broadband connection, but there's a  
3 pressure from a financial standpoint as to where  
4 does that make sense for them to move it forward,  
5 and just as importantly, the increased need of  
6 information at the right place at the right time  
7 with the right level of security around it.

8           An example. One of our clients, the  
9 Iowa Health System, through a process that we  
10 worked with through them over the last 4 years  
11 made a private investment after analyzing their  
12 existing network which is a combination of carrier  
13 networks throughout the State of Iowa made a  
14 decision to privatize their network. So we  
15 implemented a program, it is a complete 2,200 mile  
16 network of dark fiber that's lit and controlled.  
17 We manage that on their behalf. That's one of the  
18 things that FiberUtilities Group does. But they  
19 saw such a business need moving forward to better  
20 serve their patients that they made the investment  
21 in the network 4 years ago and the payoff for them  
22 has been enormous. They're a large system, the



1 largest in the State of Iowa. They have 11 large  
2 affiliate hospitals with over 140 different  
3 clinics. So the combination of connectivity  
4 really allowed them to change the way they deliver  
5 medicine today, and it's a fairly compelling story  
6 from how they do it in the rural areas to the  
7 metro areas, so it's a pretty significant success  
8 story based in the Midwest.

9 Through their leadership and as we put  
10 the network in place, they acquired an additional  
11 fiber throughout their network, and so one of the  
12 programs they've made an investment in through the  
13 pilot program is they've invested into a second  
14 pair on that fiber network, and so they've lit  
15 that network. The first pair that I just  
16 described for their core usage, all their  
17 hospitals, all their data, everything that they're  
18 using internally. The second network is for the  
19 utilization of all health care systems across the  
20 State of Iowa, the doctors, the other hospitals,  
21 to exchange information at a multigigabit level as  
22 Doug said earlier, so to have something that

1 enables a new way of delivering health care, and  
2 the vehicle that we've used has been the pilot  
3 program, and successful used it. We've worked  
4 very aggressively with the FCC and with the USAC  
5 folks to develop a plan that allowed us to do  
6 that. We made a decision to utilize the carrier  
7 environment in the State of Iowa and what worked  
8 out from a partnering perspective was that we were  
9 able to take those FCC dollars and invest it with  
10 that carrier to build a long-term 100 megabit  
11 connection that allows for the future-proofing is  
12 what I would say of the medical network in the  
13 State of Iowa.

14 The second one is a little different  
15 network. This is in the panhandle of Nebraska,  
16 and if anybody has been out to the panhandle, it's  
17 a beautiful part of the country with great people  
18 out there. The challenge in the panhandle is  
19 there really is no network. There's a lot of  
20 older network out there, but really no  
21 high-capacity network out in the place today. The  
22 panhandle has 6.5 people per square mile. They

1       were awarded again in the pilot program about a  
2       \$20 million program. The challenge out there is  
3       to interconnect the nine hospitals together. You  
4       talked about some of the stories. Some of the  
5       stories of how they deliver health care today is  
6       in some of the smaller hospitals they bring people  
7       up under the Polycom, they shoot the picture to  
8       show that patient, and then they shoot the  
9       information to the major hospital which is in  
10      Scotts Bluff and they diagnose what to do with it.  
11      There are stories about they're transporting that  
12      patient back to Scotts Bluff which is over an  
13      hour's drive, the patient gets there before the  
14      information does over the T-1, so it's really a  
15      challenge for them to develop the way they would  
16      like to and maintain the physicians they have and  
17      provide the quality of care they have. The  
18      exciting part about this program is we've advanced  
19      it. We're in -- stages from an RFP, and we will  
20      be deploying a Greenfield fiber network out in the  
21      panhandle of Nebraska which will completely change  
22      the way they can deliver medicine out in the

1     panhandle. The second thing it will do is it will  
2     allow that infrastructure to be leveraged by other  
3     people who can develop other technology solutions  
4     in the panhandle. Part of these projects are,  
5     number one, the grant and having the money, but  
6     the most important part after that is the ability  
7     to make it sustainable? How do these things  
8     survive? So the challenge has been in Nebraska,  
9     and I think we've solved it, is utilizing a second  
10    pair of fiber to become sustainable in the network  
11    and have had great results and great success with  
12    that so far.

13               By wrap-up, I'm a big believer in  
14    infrastructure and I'm a big believer in big  
15    broadband. I think it enables a new way of doing  
16    business and it enables a lot of things, it really  
17    does, but also can be a tremendously limiting  
18    factor. If it's not there, it won't happen, and I  
19    think you can see lots of examples of that when  
20    things were there, new things started to develop.  
21    So big broadband to me and next-generation  
22    connections, we should on the future side. Don't

1 make the investment in today's kind of technology,  
2 make it in tomorrow's. Our view is if we look at  
3 first mile should be 100 meg or better. Some  
4 people might say that's an enormous amount in a  
5 rural area, but if you think about that going, if  
6 you look at the gear, and I'm sure there are  
7 people who will talk about some the electronics in  
8 the gear, just the connections off of this gear  
9 are moving away from a gig, they're going to 10  
10 gigs, 40 gigs, 100 gigs. So we need to have the  
11 roads or the infrastructure get ahead of that  
12 power curve, and I've experienced that with  
  
13 clients that when you put the infrastructure in  
14 it's amazing what will happen to their business  
15 model and I think the same thing will happen to  
16 health care, so big broadband. Have networks that  
17 can be multipurpose so that the investment that's  
18 made, allow that to be utilized in a lot of  
19 different ways. Don't make it proprietary. Make  
20 it open. It will enable new things to happen  
21 across the marketplace, and again, we've seen  
22 proof of that in several of the networks we've

1 done.

2 The third part of that is I think that  
3 carriers should be part of this. When working  
4 with them and finding a place where they can win,  
5 where the client and the enterprise can win and  
6 the community can win, I really think again having  
7 this kind of infrastructure and these kinds of big  
8 roads will enable a lot of stuff that Doug talked  
9 about, having the right kinds of pipes in place,  
10 and I do that government plays an important role  
11 in that in helping fund that kind of  
12 infrastructure. Thank you.

13 DR. KAUSHAL: Thank you. Next we have  
14 Alverson who is Professor of Pediatrics at the  
15 University of New Mexico School of Medicine.

16 MR. ALVERSON: Thank you, and good day  
17 to everyone. I want to thank the FCC and everyone  
18 here who has given us the opportunity to make  
19 comments about broadband and health care which is  
20 critical to this nation and I would say the world.

21 I'm the Medical Director of the Center  
22 for Telehealth and Cybermedicine at the University

1 of New Mexico. I'm also the President-Elect of  
2 the American Telemedicine Association which  
3 broadly represents the telemedicine community in  
4 this country and around the world. I'm also one  
5 of the participants in the Rural Health Care Pilot  
6 Program sponsored by FCC.

7 We were asked to address various issues,  
8 and my focus is going to be on the Rural Health  
9 Care Pilot Program. What are the lessons learned  
10 from the FCC's pilot to date? What are the  
11 successes? What could be done to improve the  
12 program? And whether we should be incorporating  
13 the traditional urban rate discount program for  
14 telemedicine as well.

15 Coming from a large rural state, New  
16 Mexico is the fifth-largest state, we're  
17 thirty-seventh in population, we're quite rural,  
18 and access to health care services, health  
19 information, education and training, is a real  
20 challenge for us. When we looked at the FCC's  
21 Rural Health Care Pilot Program we saw an  
22 opportunity, a goal there put forth there to

1 facilitate the creation of a nationwide broadband  
2 network dedicated to health care, provide funding  
3 for up to 85 percent of the applicant's direct  
4 cost. This program was established by the FCC to  
5 help public and not-for-profit health care  
6 providers deploy a state or regional dedicated  
7 broadband health care network, so really something  
8 we're here to talk about today.

9 As an example, in our region in the  
10 Southwest, this is a huge, complex, challenging  
11 project that really is based on a network or  
12 networks, what we call a Southwest Telehealth  
13 Access Grid. We have several stakeholders,  
14 actually about 17 different stakeholder groups,  
15 representing a variety of health care provider  
16 institutions. And then looking at how we best  
17 integrate the high-speed backbones across the  
18 country, Internet2 or National Lambda Rail.

19 Where are we at? The current status as  
20 of August 12, 2009, last month, we're in the final  
21 year of a 3-year program, approximately at the  
22 time of this report we have 10-1/2 months left to



1       encumber the funds allocated. There have been  
2       mergers in currently 62 out of the 69 original  
3       projects going forward, but as of August 12, 2009,  
4       we have 47 requests for proposals for 33 projects,  
5       that's 53 percent of the projects, at that point  
6       in time have actually have been committed.  
7       Twenty-six funding commitment letters for \$20  
8       million, that's less than 5 percent of the \$417  
9       million in funds allotted, and we're in our final  
10      year and getting into the eleventh hour. Six-  
11      million dollars has been disbursed and that's less  
12      than 2 percent of the funds allocated?

13               What does that tell us? I could go into  
14      a lot of detail. I've done this before. We've  
15      done a SWOT analysis. The strength of course is  
16      this is a great idea. This country needs  
17      broadband for many, many applications, but  
18      certainly for health care as well. What's the  
19      weakness we're seeing? The process does not seem  
20      to be working well based on what I just said.  
21      What are the opportunities? We have plenty of  
22      opportunities to improve the process and to

1       achieve the goals of this program. What are the  
2       threats then? The threat is we'll have  
3       unsuccessful project implementation and, thus,  
4       have not realized the true benefits of this  
5       program.

6               What I'd like to do in wrapping up my  
7       presentation is to talk specifically about  
8       recommendations that we would like the FCC to  
9       consider. First of all, recommendations for the  
10      program in general. There are numerous problems  
11      that have surfaced in the implementation of the  
12      program in part due to the traditional Universal  
13      Services Administrative Company, USAC, process.  
14      It's not their fault, but a process that doesn't  
15      seem to work well for a program to complicated  
16      that is a pilot. What's our general  
17      recommendation? Let's open and facilitate and  
18      expedite the process and reinvigorate the pilot  
19      nature of this project.

20             Specific recommendations are to treat  
21      this a pilot program with more self-management,  
22      and we are recommending on behalf of many of the

1 stakeholders involved in the project to extend it  
2 an additional year. The recommendations you can  
3 see in detail and I believe these presentations  
4 will be made available to those on the FCC  
5 Webpage. I'm not going to go into detail, but we  
6 feel that we should allow the selected  
7 participants who are self-provisioned for  
8 components of the projects such as network design  
9 studies and modeling to access their budget funds  
10 directly without requiring competitive bidding.  
11 And due to the delays, extend the pilot project  
12 funding period to 2011, particularly since the  
13 program didn't officially start until January  
14 2008, well into the first year.

15 We'd recommend creating an advisory  
16 board. There are inconsistencies across current  
17 projects and interpretation of the original FCC  
18 order and its intent and a need for effective and  
19 efficient input to FCC from a variety of  
20 stakeholders, many on these panels today, and  
21 other subject-matter experts.

22 Provide funds for project management and

1 administrative support. Despite the complexity of  
2 many of these projects, no money was allowed to be  
3 allocated for project management. Those RFPs and  
4 those service providers who bid bundle in the  
5 administrative costs, yet those of us who have  
6 fiscal and legal responsibility for these projects  
7 receive absolutely no funding to manage these  
8 complex projects. We'd recommend the use of some  
9 federal dollars to support project administration  
10 and project management costs, and they need to be  
11 allowed.

12 We would ask that the requirement for  
13 progress reports until the project is implemented  
14 be eliminated. We have to submit quarterly  
15 project reports in great detail without little  
16 progress being made, so we feel that that  
17 requirement should be lifted until funding is  
18 actually dispensed and the project has started.

19 The next recommendation is to remove the  
20 requirement for a sustainability plan prior to  
21 access to funding. This was never required in the  
22 order when the proposals were submitted, but after

1 proposals were selected, we were then bold before  
2 any funding commitment letters would be issued, we  
3 must have an acceptable sustainability plan. We  
4 definitely agree that sustainability is an  
5 important aspect, but this is a pilot program.  
6 Not every program will be successfully  
7 implemented. We learn from pilots and we believe  
8 that since it's a pilot program, requiring a  
9 sustainability plan should not hold up funding,  
10 and in fact, this created a shockwave through most  
11 of the selected participants and may be a cause  
12 for some of the delay.

13 We'd also recommending changing the 15  
14 percent cash match requirement. The current  
15 severe economic decline and considerable delay in  
16 providing a final funding letter have left many  
17 project applicants desperate to gain immediate  
18 access to their 15 percent cash which is required.  
19 We'd recommend that the Commission set aside the  
20 match requirement or at a minimum adopt a more  
21 liberal position in accepting in-kind  
22 contributions including administrative services.

1           Allow aggregation of services in  
2   avoiding silos. We've heard already from the  
3   panel that what we're looking at in this country  
4   is to take broadband and aggregate several  
5   applications, that this idea of having a siloed  
6   dedicated telemedicine network we don't believe  
7   really goes to sustainability, that we should look  
8   at opportunities to bring in a spectrum of  
9   applications. This can lead to higher volume,  
10   meet more community leads, and can lead to better  
11   price points and sustainability. So we'd like to  
12   see all of the Universal Services' programs,  
13   namely schools, libraries and health care and  
14   others collaborate in leveraging existing  
15   resources. Currently the FCC is funding several  
16   different and disconnected networks in rural areas  
17   and this could be streamlined to build a  
18   communitywide public-sector network.

19           The final recommendation is to align the  
20   FCC's programs with other federal programs in the  
21   health care delivery system. The current program  
22   approach is dated and several critical gaps, with

1 inconsistent with many components of health care  
2 delivery and use of telemedicine. So we would  
3 like to see a broader and modernized definition of  
4 eligible health care providers to include new  
5 provider types in the whole continuum of care, and  
6 as we heard earlier, actually looking at how do we  
7 use broadband to get health care to the consumer,  
8 to you and I as patients? That means getting it  
9 to the home environment and supporting remote  
10 monitoring, that it's not just hospitals and  
11 clinics, but it's all of us.

12 In summary, the recommendations are to  
13 treat the program as a pilot with more  
14 self-management and extend it an additional year;  
15 create an advisory board so the FCC can get  
16 ongoing dynamic input from the health care,  
17 network and technology communities; provide funds  
18 for project management and administrative support;  
19 eliminate the requirement for the progress reports  
20 until project implementation; remove the  
21 requirement for a sustainability plan prior to  
22 access to funding; change the 15 percent cash

1 match requirement; allow aggregation of services  
2 and avoid silos; and lastly, align the FCC  
3 programs with other federal programs and health  
4 care delivery systems. Thank you very much.

5 DR. KAUSHAL: Many thanks. Next we have  
6 John Clarey who is the Chairman of the National  
7 Medical Wireless Broadband Alliance.

8 MR. CLAREY: Thanks very much. I'd like  
9 to thank the FCC for giving us this opportunity to  
10 talk about the plan that we have to deliver  
11 wireless broadband to the point of care.

12 The National Medical Wireless Broadband  
13 Alliance was formed earlier this year to provide  
14 high-speed wireless broadband access to nurses,  
15 doctors, public safety workers, IT specialists and  
16 the communities they serve. The group is now 100  
17 hospitals and growing. The hospitals range from  
18 small health cares, critical access hospitals, to  
19 hospitals with over 800-bed large-scale  
20 facilities. It's focused on developing  
21 open-access wireless solutions to deliver wireless  
22 to the point of care. I am a 20-year veteran of



1 building out wireless networks and broadband  
2 networks and the alliance's President, Steve  
3 Solomon who is here today is a 25-year veteran of  
4 the health care industry.

5 The primary issue we have in health care  
6 or one thing that is a big challenge is where we  
7 are in electronic medical records and the  
8 deployment of electronic medical records at all of  
9 our hospitals in the health care system. We're  
10 way below the industrialized averages, below 30  
11 percent, and one of the reasons why is we have a  
12 choke point at the point of delivery of these  
13 systems. Closed wireless systems and systems  
14 inside hospitals that cannot delivery open access  
15 to all the caregivers make it very difficult for  
16 these systems to work. The impact is it stifles  
17 adoption of new technologies. Each of these  
18 panelists have talked about fiber and bringing  
19 fiber to the hospital. The problem with bringing  
20 fiber to the hospital is that it doesn't stop  
21 there. You need a network infrastructure inside  
22 the hospital to deliver the actual broadband to

1 the point of care.

2 The solution that we provide and that  
3 the hospital group is pursuing is a distributed  
4 antenna system that goes inside the facility that  
5 delivers the entire spectrum of wireless  
6 technologies throughout the facility. The  
7 challenge that these hospital administrators have  
8 is they have everything from a 450 to 6 gigahertz  
9 wireless spectrum that they're having to deal with  
10 and within each of these different frequencies  
11 that have public safety, they have a variety of  
12 different wireless carriers, they might have  
13 Verizon, Sprint, AT&T, T-Mobile, they may have a  
14 dedicated wireless telemetry system, they probably  
15 have some kind of a WiLAN/internal LAN, and they  
16 have all these different systems running different  
17 discrete networks. What that causes is a problem  
18 of open-system operability because each network is  
19 its own network that operates without allowing  
20 other people onto the network, so if you have one  
21 wireless carrier in on a network on a contract and  
22 another wireless carrier is not on the contract,

1       that particular phone or whatever that wireless  
2       device is will not work. The same thing happens  
3       with the various wireless telemetry machines. So  
4       what we're doing and what these hospitals would  
5       like to see is systems that are built that provide  
6       all of these solutions on one system so that they  
7       can bring broadband to the point of care across  
8       the board.

9               In conclusion, we're grateful to take  
10       the opportunity to speak about this national plan  
11       and we've love to take questions later in the  
12       conference.

13              DR. KAUSHAL: Many thanks. Our final  
14       panelist is Raju Prasannappa who is the Chief  
15       Technologist at the Harris Healthcare Solutions  
16       Group.

17              MR. PRASANNAPPA: On behalf of the  
18       Harris Corporation, thank you very much for giving  
19       us an opportunity to present our ideas here.

20              My name is Raju Prasannappa and I'm the  
21       Chief Technologist for Harris Healthcare  
22       Solutions. First, a few words about Harris. We

1 are an international communications and  
2 information technology company serving government  
3 and commercial markets in more than 150 countries  
4 for over a century. The company is headquartered  
5 in Melbourne, Florida, and is dedicated to  
6 developing and delivering best-in-class solutions  
7 in communications products and systems through  
8 four major operating divisions.

9 As our national goes through this  
10 unprecedented health care transformation, we are  
11 on a mission to revolutionize the quality of  
12 health care. We are bringing the full breadth of  
13 capabilities of the corporation and our  
14 capabilities in nonhealth-care domains to solve  
15 some of the toughest challenges facing health care  
16 today throughout the U.S. and the world. We are  
17 committed to improving the health outcomes through  
18 the concept of enterprise intelligence by assuring  
19 critical medical information is delivered with  
20 security and privacy to the right person on the  
21 right device and at the right point of care, and  
22 we believe that that's going to be the key

1 improving health care and reducing costs.  
2 Availability and affordability of broadband  
3 capabilities is very critical to the success of  
4 almost every single innovation that's being worked  
5 on in health care today. Without that, it's  
6 almost impossible to get the best return on the  
7 investment. Also, and this was mentioned earlier,  
8 broadband affects player participating in the  
9 health care value chain. What I call the health  
10 care value chain, every one of us here is a  
11 participant in that. I'm also distinguishing  
12 between the players in the health care value  
13 chain, the providers, consumers, researchers,  
14 payers, hospitals, labs, pharmacy companies and  
15 pharmacies. We all have a role to play in this.

16 In addition, there are many key elements  
17 of health care reform that are being discussed  
18 that cannot be implemented without the existence  
19 of a robust infrastructure, as an example, the  
20 health care exchange. If the can't review the  
21 exchange and look at the exchange, they will not  
22 be able to get the best care. I'm going to

1 illustrate this with a few examples. What I'm  
2 going to emphasize is more on the interoperability  
3 issue and the benefits that it can bring. I think  
4 we have seen interoperability at a different  
5 level, at the electronic health care level. There  
6 has been a lot of progress on the (inaudible) and  
7 also a couple of other initiatives, but I think I  
8 just can't overemphasize the importance of that.

9 In today's transient and mobile society,  
10 global access to stored medical images and  
11 documents is crucial to better patient care, and I  
12 picked images for a good reason, because of the  
13 size of the images and the amount of bandwidth you  
14 need to transfer images. It's particularly  
15 important to patients who have had testing and  
16 treatment at multiple locations with a city or  
17 region or even globally. Technology is available  
18 to deliver clinicians the complete set of images  
19 needed to make informed treatment decisions at the  
20 point of care no matter where the personal data  
21 resides, but the key is to get those images to  
22 them. This technology complemented with Health

1     and Human Services' National Health Care  
2     Information Connect Network can enable  
3     virtualization of care with patients and data all  
4     integrated at the point of care; without the full  
5     set of data, decisions cannot be made. We can  
6     enable medical images and documents to be linked  
7     to a patient's electronic medical record, quickly  
8     locate it, and share it online for viewing and  
9     collaboration at multiple sites. Availability of  
10    a reliable broadband interoperability is key to  
11    successfully implementing this type of capability.  
12    This cannot only impact how health care is  
13    delivered today in the world and universe, but  
14    also significantly affect the cost and quality of  
15    health care.

16           My next example is from the emerging  
17    field of digital pathology, an area of research  
18    and development at Harris. Today digital  
19    pathology is where radiology was 10 years ago.  
20    Now you can have radiology images delivered around  
21    the world and you can have 24/7 reading of the  
22    images through networks, and a lot of other

1 companies are doing it, but pathology is still in  
2 its old state. It requires an ability to  
3 manipulate large-scale images, almost gigabytes of  
4 images with multiple images associated with a  
5 single sample. The single sample could almost be  
6 10 to 12 images with infinite (inaudible)

7 We can provide the pathologist the same  
8 seamless viewing experience as they would have  
9 with the microscope. If you talk to pathologists,  
10 they're so used to reading with a microscope and  
11 if we can provide the same level of experience we  
12 can almost virtualize pathology and meet the  
13 increasing demand for pathology services and also  
14 work on the challenge posed by a shortage of  
15 highly qualified pathologists. Again, broadband  
16 can play a crucial role in making this a reality.

17 Another area of extreme importance and  
18 desperately in need of interoperable  
19 communications is the field of emergency medical  
20 communications. I would refer you to the findings  
21 of the Joint Advisory Committee on Communications  
22 Capabilities of Emergency Medical and Public



1 Health Care Facilities which came out in February  
2 of last year to which I also contributed. I'm  
3 going to read the last two lines of this, "Robust  
4 broadband networks can route emergency-related  
5 communications traffic rapidly, securely and  
6 reliability and ensure that patient information is  
7 available in remote locations." I'm going to  
8 illustrate that with a simple example. The  
9 Department of Interoperable Standards -- broadband  
10 networks built on common and standardized IP  
11 Internet protocols can facilitate the transmission  
12 of real-time video, pictures and graphics in a  
13 mobile environment to create virtual emergency  
14 rooms at the scene of accidents, disasters, as  
15 well as en route to hospitals. This means that  
16 the care of the patient does not have to wait for  
17 a rescue unit to reach a treatment facility, but  
18 can be provided immediately upon arrival at the  
19 site of the incident and during transit. We can  
20 even use mobile emergency vehicles to provide ad  
21 hoc networks and provide bandwidth for  
22 emergencies. This can provide capacity for

1 critical patient information to be available prior  
2 to the patient's arrival at the emergency  
3 department and thus optimize response teams and  
4 facilities. You can imagine what an effect this  
5 can have in responding to emergency situations and  
6 especially disaster situations.

7 As you can see from these examples,  
8 there are a variety of players in the health care  
9 value chain and each of them has their own unique  
10 needs. One of the biggest challenges is to  
11 determine the infrastructure needs required by  
12 each player. Everybody requires different levels  
13 of care infrastructure and there are many factors  
14 that influence this, the most important being the  
15 type of services they provide. For example, the  
16 needs of a primary care physician are different  
17 from that of a radiologist or a pathologist.  
18 Primary care physicians generally do not need to  
19 view diagnostic quality images, but will need  
20 access to referential quality images and also to  
21 lab results and electronic medical records.  
22 Whereas a radiologist will have to access

1 diagnostic quality images so that they can make  
2 the analysis and look at the images and also to be  
3 able to look at it from anywhere they're residing,  
4 even on a desktop or a mobile device.

5 An emergency room should also be able to  
6 receive vital sign information, radio feeds from a  
7 remote location, and be able to video conference  
8 with a remote location. Again, another example  
9 would be a distance management services provider  
10 receiving vital sign information from multiple  
11 devices, from multiple geographic locations and be  
12 able to transmit required instructions in multiple  
13 formats, text, audio and video.

14 To my knowledge so far, I haven't come  
15 across a comprehensive study to determine the  
16 different tiers of infrastructure needs of  
17 consumers and providers of health care taking into  
18 consideration both the current needs and the  
19 emerging needs, and this study would be beneficial  
20 to both the health care and the communications  
21 industries. I'd recommend that as the National  
22 Broadband Plan that the Commission examine

1 different tiers of broadband infrastructure  
2 required by various health care providers, and to  
3 the extent necessary, recommend in the plan that  
4 such information be continued to be collected in  
5 order to ensure the infrastructure and bandwidth  
6 needs of everyone in the health care ecosystem  
7 continues to be met.

8 I will end my presentation with an  
9 example that's close to my heart and it's been in  
10 the news lately, as of yesterday in fact.  
11 Pancreatic cancer is one of the deadliest forms of  
12 cancer. Once the patient is diagnosed, there is  
13 very little time to waste. The clock is ticking.  
14 The patient and the family should in the comfort  
15 of their home be able to research the options  
16 available, educate themselves, get advice and find  
17 the best place for care, and share personal health  
18 records with the specialist and also the images,  
19 with the highest level of security and privacy, be  
20 able to get the necessary care at the place of  
21 their choice, and also to be able to monitored  
22 remotely after a treatment plan has been

1       determined and implemented. Much of this would  
2       not be possible without reliable and affordable  
3       infrastructure and connectivity. The FCC's  
4       recognition of the role of broadband in health  
5       care and their commitment in this important area  
6       is evident from the current programs such as the  
7       Rural Health Care Pilot Program and this very  
8       workshop. I thank you for your attention and  
9       support. On behalf of the Harris team, we are  
10      excited about being a part of the next generation  
11      of health care. Thank you.

12               DR. KAUSHAL: Thank you. I'd like to  
13      thank the panelists for their insights. We're  
14      going to have about 30 minutes of questions now  
15      from the moderators and then we'll open it up to  
16      the audience.

17               First, the current state of play. We  
18      would love to hear your thoughts and perspectives  
19      first on what is the connectivity state now for  
20      places where health care is provided and are there  
21      any learnings to have in terms of types of places  
22      which aren't connected? I would love your

1 insights on that topic first.

2 MR. ALVERSON: This is Dale Alverson  
3 from New Mexico. Clearly in much of this country  
4 we have incredible gaps in broadband. There are  
5 huge digital divides, and so one of the efforts  
6 obviously is to create an affordable broadband  
7 infrastructure that serves every American  
8 regardless of, and broadband becomes important not  
9 only for rural America but for metropolitan areas  
10 as well, not only to be able to provide services  
11 to rural areas, but for citizens within these  
12 urban and suburban areas. So it's going to be  
13 really important in the Broadband Plan to look at  
14 how do we then get affordable connectivity to  
15 every American that needs it and desires it. I  
16 would also recommend that when we look at it, we  
17 look at it broadly. It's not just health care as  
18 I mentioned earlier, it's education, distance  
19 learning, connecting libraries, the schools and  
20 colleges and universities, but also business and  
21 government. So by aggregating those services I  
22 believe we can come up with a much better price

1 point that provides a return on investment for  
2 industry as well as provides a whole spectrum of  
3 services needed by people throughout this country.

4 DR. KAUSHAL: From your experience, do  
5 you think the major issue is a lack of  
6 connectivity, or the second topic I was going to  
7 discuss, just the lack of quality of connectivity?

8 MR. ALVERSON: I think it's both of  
9 those, and I believe it's also affordability.  
10 I'll give you an example. In Ruidoso in New  
11 Mexico which is not quite 200 miles away from  
12 Albuquerque, for a connection to provide for  
13 health information exchange in telemedicine with  
14 the hospital, it's currently \$12,000 a month for  
15 broadband. The price will go up to \$17,000 a  
16 month this coming year. There is absolutely no  
17 way that I believe that we as American citizens  
18 can afford that or tolerate it. We have to look  
19 at not only broadband and continuing to support  
20 broadband because they think it's so critical for  
21 that community, but we've got to find ways of  
22 enhancing broadband and making it affordable for

1 everyone. And if we're going to actually reach  
2 out to the individual consumer when we're looking  
3 at price points that high, it's just not going to  
4 work. So we have to look at those things, filling  
5 the gaps in adequate broadband that can support  
6 all of these applications and make it affordable.

7 DR. KAUSHAL: Thanks. Maybe Douglas or  
8 Scot, given your experiences, I'd like one of you  
9 to comment on those topics.

10 MR. VAN HOUWELING: I think you already  
11 understand from the examples that I've given that  
12 we have a very robust set of connectivity to our  
13 major medical centers around the country, and  
14 actually they're rather well interconnected. So  
15 our problem is as we move out of those major  
16 medical centers, the first level is to the  
17 community health care centers, and in many of  
18 these community health care centers they cannot  
19 actually conduct a video conference out of those  
20 health care centers which means they can't consult  
21 effectively with major medical centers.  
22 Furthermore, as we move into the emergency medical



1       care environment, we haven't built out an adequate  
2       mobile infrastructure to support the emergency  
3       medical technician in the field working back with  
4       the hospital. So it's not just wired  
5       infrastructure. Wireless infrastructure is an  
6       important part of this.

7                Another aspect of this is I don't think  
8       we have thought carefully enough about the  
9       aggregation issues. If what we really need to do  
10      is adequate consultation with someone in a home is  
11      somewhere in the neighborhood of 10 megabits, then  
12      if we have a community health care clinic where  
13      we've got a number of doctors who are going to  
14      want to have these simultaneously, then we need to  
15      raise the bar for that facility up into the  
16      neighborhood of several hundred megabits. If you  
17      look at the cost of acquiring that kind of  
18      connectivity for those primary care centers today,  
19      there is no way that the current medical  
20      reimbursement system can accommodate those costs.  
21      We wind up in a situation where we could do so  
22      much more if we found a way to accommodate what we

1       can already do in major medical centers and move  
2       it more broadly out into society.

3               MR. GARR: I'd like to follow-up on  
4       that, Doug. How do the major medical centers fund  
5       this? If it doesn't come through reimbursement  
6       which I get, it's coming from somewhere.

7               MR. VAN HOUWELING: This goes back to  
8       what Dale said, and it's aggregating multiple  
9       uses. So if you were trying to carry all these  
10      costs on the top of the practice budget, you  
11      couldn't do it. But you've got research  
12      activities, you've got instructional activities,  
13      all those sources of funds get aggregated in order  
14      to support the not-for-profit organizations that  
15      deliver the capabilities.

16              MR. EBERLE: I would add to that too the  
17      discussion of broadband, what is broadband? There  
18      are definitions that I've heard that I don't  
19      consider to be broadband, so when we talk about  
20      what the size of that pipe is, what are we  
21      actually looking to put in and that infrastructure  
22      should the ability to have the future- proofing.

1     You've talked about gigs and I agree with that,  
2     and so there are some definitions that are in  
3     place today that are well below a gig that are  
4     considered broadband and I would argue that that's  
5     not broadband, first. The second element as Dale  
6     said in an example of a \$12,000 circuit, part of  
7     us as a business and some of the exercises we've  
8     done where a client has privatized it, it was a  
9     mathematical formula. They looked at what they  
10    could get from the current environment and it was  
11    cheaper to do it a different way or privately  
12    because the economics worked that way. So I think  
13    having an environment and using all of the  
14    constituents out there, the carriers and everybody  
15    that's there, but create something that incents  
16    the right kind of broadband at the right price  
17    points. Some of the incentives and reimbursements  
18    today don't incent new broadband, they pay for old  
19    broadband, and so I think that money can be  
20    re-spent a different way to create an environment  
21    where that \$12,000 wouldn't happen, and maybe  
22    there's more infrastructure money that goes to

1       create an environment or infrastructure so that  
2       that becomes more reasonable. So looking at how  
3       it's being spent today, I think there are some  
4       disincentives for certain entities to put  
5       broadband out there.

6               DR. KAUSHAL: Just a follow-up question,  
7       I think something you touched on in your  
8       presentation, Scot, is that we should build  
9       broadband for future needs rather than from right  
10      now. This is a hard question, but how do you  
11      quantify those future needs? That's the  
12      million-dollar question.

13             MR. EBERLE: One example, the Iowa  
14      network, we put in and we said a gig to a hospital  
15      is going to be perfect. Before we installed it we  
16      were at 2, and now we're at 10. So what I would  
17      tell you though is to think about the  
18      infrastructure that's put in place. Our name has  
19      fiber in it. That doesn't mean that we don't  
20      wireless. We actually use wireless and we use  
21      copper and we use other things. As an example,  
22      the capacity of fiber is infinite. It's what you

1 put on the ends of it that make the difference.  
2 So I think making a smart investment, and it's not  
3 an easy one-size-fits-all answer to it, but having  
4 the appropriate infrastructure that allows you to  
5 scale that proportionately, and as you start to  
6 scale that, the costs go down. So it's a hard one  
7 to answer and we've always tried to engineer a  
8 certain way, and that's why I said 100 meg at  
9 minimum in access and 10 gig at a middle mile, and  
10 I would imagine as Dale looks at Internet2 and  
11 National Lambda Rail, those national networks are  
12 going to continue to have to expand their capacity  
13 because at some point there's a choke point on  
14 these networks.

15 DR. KAUSHAL: Thanks. Maybe just  
16 shifting on now to wireless broadband. John, I'd  
17 love to further get your comments within that  
18 space and more about capabilities, and again this  
19 is more about focus within the home and wireless  
20 home monitoring, so any perspectives you think  
21 around that topic please.

22 MR. CLAREY: As the 4G networks start to

1       come and WiMAX starts to come and they starting  
2       bringing 10 megabits, some of these applications  
3       are going to be able to be utilized. If you can  
4       guarantee 10 megs, then you can guarantee that  
5       service and they can provide it. I believe that  
6       it falls in line with what they're doing on these  
7       fiber networks to be able to eventually distribute  
8       that final connection through a WiMAX connection  
9       or something like that that's at the higher speed.

10               DR. KAUSHAL: I think also for the  
11       benefit of people listening, can you talk a little  
12       bit more about the applications that you think  
13       wireless broadband will empower, because again,  
14       that's a little less in the press these days.

15               MR. CLAREY: They actually reviewed a  
16       number of them on the slides earlier, but as far  
17       as some of the critical access hospitals and the  
18       smaller hospitals to be able to have a video  
19       connection to an expert in another hospital, a  
20       teaching hospital or children's hospital or  
21       something like that for an expert that they would  
22       otherwise not have access to, that opens up those

1 applications and the need for data and large file  
2 transfer is just a prerequisite for the increased  
3 efficiencies that can be gained by these things.

4 MR. ALVERSON: If I could add to that, I  
  
5 think in rural America, and you look at New  
6 Mexico, part of the solution is going to be  
7 looking at wireless mobile technologies. Putting  
8 fiber in the ground is not going to be a realistic  
9 option. If you look at the community I mentioned  
10 that's looking at a \$17,000-per-month bill,  
11 they're in the mountains. They're not going to  
12 put adequate landlines in at this point. So a lot  
13 of the issues about not only aggregation but  
14 trying to look at broadband in increments  
15 independent of distance and location needs to be  
16 an important component of this so that Ruidoso  
17 doesn't pay any more than we'd pay in Albuquerque  
18 for whatever bandwidth we feel we need and I  
19 believe it can be scalable. So can we predict the  
20 future as far as how much bandwidth? Probably  
21 not. I can imagine as we look at other  
22 applications, for instance I've seen some

1 demonstrations of holograms of individuals in real  
2 time. It's incredible bandwidth hungry. We can  
3 only imagine the amount of bandwidth we're going  
4 to need, and I think we're going to have to work  
5 closely not only with government and the FCC, but  
6 with industry in being prepared for the next  
7 generation of broadband that we're going to see as  
8 an important aspect of health care and other  
9 applications.

10 MR. VAN HOUWELING: I'd like to  
11 reinforce that point. I sometimes think that the  
12 way we're proceeding here is like we're trying to  
13 get to the moon by climbing up a tree, and the  
14 only way you'll get to the moon by climbing up a  
15 tree is to climb back down and start over again.  
16 I think we do have to recognize that some of the  
17 paths that we have followed traditionally will  
18 require starting over, and that's why I think it's  
19 so important to think about the base investment,  
20 and as you said, its ability to scale.

21 The second thing I think we need to do  
22 is we need to think about sustaining a business



1 model that continues for continued reinvestment in  
2 this infrastructure. We can't think of this as a  
3 one-time investment. Everything that we know from  
4 our experience at Internet2 is that every 5 to 7  
  
5 years we have to go back and reinvest in the  
6 infrastructure even though 5 to 7 years ago we put  
7 in the most powerful infrastructure that we could  
8 possibly imagine at the time. This technology  
9 continues to move forward. We thought when we  
10 started Internet2 that 2-1/2 gigabits for a  
11 national connection was a big deal. We're now  
12 operating at 800 gigabits and it's been about 10  
13 years with this level of effort and reinvestment.  
14 It's all been done with fiber, so we've been able  
15 to scale it, but the fact is we've had to reinvest  
16 in this technology on a regular basis and we need  
17 to make sure that our business plan allows for  
18 that.

19 MR. GARR: That's a great point. I have  
20 a couple of other questions that are on a little  
21 bit of a different tack. We've talked a lot about  
22 deployment issues, I don't want to minimize those,

1 but I think someone put up a slide that I'm going  
2 to use as an example to ask a question and the  
3 slide had adoption of electronic medical records  
4 by country and it had the United States lagging.

5 Implicit in that is what's the reason. Why are we  
6 lagging? Are we capital constrained? Are we  
7 bandwidth constrained, et cetera? I'd love to ask  
8 the group if anyone has any perceptive on the  
9 adoption side of this problem. I think most of  
10 the comments are in the spirit of if we had better  
11 infrastructure, people would use it, and I think  
12 that's a perfectly valid point of view. But I  
13 think there's another way to look at that problem  
14 which is that in different parts of the health  
15 care system do we have training and adoption,  
16 whether it's doctor training, physician's  
17 assistants training, nurse training, whatever? If  
18 anyone has some thoughts on the adoption side it  
19 would be very helpful to offer some comments.

20 MR. ALVERSON: First of all, to  
21 reinforce something I mentioned before, I think  
22 it's going to be imperative that the FCC

1       communicate with other efforts addressing this.  
2       The Office of the National Coordinator just came  
3       out with the first RFPs on the HIT Regional  
4       Extension Centers which is to help primary care  
5       providers look at adopting electronic health  
6       records, and then the other RFP on health  
7       information exchange. I think there has to be  
8       good communication between the user community, the  
9       health care provider community, and the various  
10      federal efforts underway which are going to be  
11      important to enhance adoption of things like  
12      electronic health records and to facilitate health  
13      information exchange. There are some great  
14      thought leaders who are already working in this  
15      arena and we just all need to work together,  
16      provider in the end, broadband, telemedicine,  
17      electronic health records, really should be aimed  
18      at improving the health outcomes and wellness of  
19      every American, and I would say when you look at  
20      it globally, everyone in the world.

21               There also needs to be careful  
22      interchange with the potential adopters. If you

1 look at diffusion of innovations theory, the  
2 adopters have to perceive some advantage, and if  
3 you look at electronic health records, not only do  
4 we have something that is legible and can better  
5 document our health care, but we can add in other  
6 things such as decision support tools. No  
7 provider I would say today can keep up with the  
8 explosion in information and new knowledge in  
9 health care and we can build that into these  
10 systems so that it adds real value to the provider  
11 and to the patient, and I think those are going to  
12 be the issues of enhancing adoption. Again I  
13 would say let's work closely with the other  
14 agencies that are trying to drive that home: How  
15 do we enhance adoption? How can we make  
16 incentives? That's not only the Office of  
17 National Coordinator, that's NTIA, that's USDA and  
18 RUS, and that is also CMS. I think there are a  
19 lot of issues that have to be addressed to make  
20 this of real value to each one of us in this  
21 country.

22 MR. GARR: I think we have a comment

1 from John.

2 MR. CLAREY: I'd like to comment on that  
3 just a little bit as well. What we've found is  
4 the doctors in the hospitals that we deal with  
5 work in an average of three different hospitals so  
6 that adoption happens when you have a change of  
7 behavior and so you're adopting something else.  
8 What will happen is if you have an application for  
9 a doctor and you give it to him and he likes it in  
10 one spot he may use it. If it doesn't work the  
11 first time, trying to convince him to do it again,  
12 they go right back to where they were. What you  
13 find is especially when it comes to these wireless  
14 applications, if their wireless system works in  
15 one facility and it doesn't work in another, they  
16 will not use the application, they'll go back to  
17 whatever it was they were doing before. In order  
18 to get adoption of these things, you need to  
19 change behavior and in order to change behavior,  
20 the first time you do it it had better work.

21 What our hospitals are wanting to do is  
22 have all the devices work in every hospital so

1       that the doctors when they come in, they can use  
2       the same device in each facility that they are in,  
3       if they're at somebody's residence, wherever it is  
4       they are, they could be at a baseball game, they  
5       need to be able to have this stuff work or they  
6       won't adopt it. If it works part of the time they  
7       won't do it.

8               DR. KAUSHAL: Thanks. We're now going  
9       to shift tack and get some questions from the  
10      audience and people at home.

11             MR. PRASANNAPPA: I just want to add to  
12      adoption.

13             DR. KAUSHAL: One last comment.

14             MR. PRASANNAPPA: Affordability and  
15      reliability is the key issue here. If a physician  
16      cannot rely on a network, they are not going to  
17      use any of them. Similarly, I don't think we  
18      should forget the consumer side of health care  
19      which is the end user, and adoption by them is  
20      also very critical. We're talking about personal  
21      health records and to be able to upload images  
22      from the comfort of your home, and that just

1 cannot happen without the reliable network.

2 DR. KAUSHAL: Thanks. There are cards  
3 being distributed, so if anyone wants to write  
4 questions, we already have some already. Question  
5 number one is, "Do you see the USAF Rural Health  
6 Care Pilot Program dovetailing with broadband  
7 deployment under the Agriculture and Commerce  
8 Departments' Broadband Stimulus Programs?"

9 MR. ALVERSON: Those of us who are in  
10 the trenches strongly believe that these need to  
11 be coordinated. I think we had a lot of hope that  
12 the BTOP and the BIP program under the Department  
13 of Commerce and NTIA and then USDA/RUS could be  
14 complementary. I still believe they can be. I  
15 think trying to understand what it would be like  
16 to be in the shoes of all of you that you're on a  
17 very fast track. There are a lot of demands being  
18 put on a lot of agencies and a lot of demand to  
19 distribute the ERA funds from the stimulus  
20 package, but I think this is a time maybe we need  
21 to pause and look at how can we make these more  
22 complementary so people can take full advantage of

1       these programs. In fact, we had talked about the  
2       Rural Health Care Pilot Program. Is it possible  
3       that the NTIA might be used as part of the match  
4       or vice versa? It was clear that there just  
5       hadn't been enough time to consider those things.  
6       I think now is the time to do that. So I believe  
7       they should be complementary and could be  
8       complementary.

9               DR. KAUSHAL: Ernesto, have you got any  
10       more questions?

11              MR. BECKFORD: No. They've all been  
12       sent to you.

13              DR. KAUSHAL: Next question, "When the  
14       Rural Health Pilot started, HHS signed on as a  
15       co-sponsor, yet they seem to be absent. Is there  
16       any coordination taking place across agencies so  
17       the program can better support federal health  
18       goals and initiatives?" This may be to you,  
19       Ernesto.

20              MR. BECKFORD: I should answer the  
21       question?

22              DR. KAUSHAL: I'm just trying to read



1 the writing.

2 MR. GARR: We have a highly encrypted  
3 handwriting.

4 DR. KAUSHAL: It should be done  
5 electronically.

6 MR. VAN HOUWELING: If we had electronic  
7 health records --

8 MR. GARR: You'd be able to read that.  
9 That would be great.

10 DR. KAUSHAL: Do we think or do we  
11 realize the necessary investment to expand needed  
12 broadband infrastructure to support EMR and  
13 telemedicine to come from the health care  
14 industry, the federal government or from other  
15 sources, and over what period of time?"

16 MR. GARR: I'd like to put that one in  
17 context a little bit which is to say anytime you  
18 spend time with the health care industry, it's  
19 amazing what it can do. It is amazing, but it's  
20 very expensive. So the question is, in your  
21 experiences, what are the ideas you have on  
22 financing for a lot of the things that we're

1       talking about, whether it's health care records or  
2       incredibly fast connections between institutions,  
3       et cetera?

4               MR. CLAREY: I could start with that a  
5       little bit. I have some experience in private  
6       equity and if you look at a private equity  
7       perspective on building out these networks, there  
8       just isn't the return, and over time, if you just  
9       allowed it to go, they would all be built out, but  
10      if the goal of the government and if the goal of  
11      the Obama Administration is to accelerate the  
12      development of technology-based health care  
13      systems, then you're going to need to push that  
14      and stimulate it, so that what happens is is you  
15      won't get that money coming from the private  
16      equity world. Then if you look at tax breaks in  
17      the case of many of our groups, they're  
18      nonprofits, so you really can't incentivize them  
19      by some kind of a tax break associated with  
20      building out a network. So I think at the end of  
21      the day the government needs to be a big pusher in  
22      these types of things in order to actually make

1       this stuff happen if the goal is to accelerate the  
2       adoption of these programs.

3               MR. VAN HOUWELING: I guess my sense  
4       here is I would like to go back to something  
5       that's already been said a couple of times. We  
6       won't be successful here if we try to place the  
7       full burden of this infrastructure on any one  
8       industry. We absolutely have to find a way to put  
9       the institutions in place that provide  
10       infrastructure broadly to all of the necessary  
11       uses so that in fact we can share the costs of  
12       this infrastructure across those uses. I'm  
13       concerned that we haven't yet set as a national  
14       goal implementing the policy for broadband so that  
15       it is designed from the beginning to be funded  
16       multi-sectorally as opposed to one industry at a  
17       time.

18              MR. ALVERSON: From my standpoint, we  
19       have to look at this as system-wide and when you  
20       start looking at it system-wide, it brings in many  
21       players. It brings in the provider system, it  
22       brings in patients, it brings industry and it

1 brings government. One of the things that I think  
2 we have to be able to show is, and I think you  
3 mentioned at the very beginning when we were  
4 looking at broadband, how do we do things for the  
5 health care system that's cost-effective. A lot  
6 of what we could do with enhancing access to  
7 health care is we improve continuity, we make  
8 health care less episodic, and the important thing  
9 is that we improve outcomes. I can give you some  
10 examples. If you look at the aging population and  
11 chronic disease, there is evidence now showing  
12 that with early detection of problems, earlier  
13 intervention, and a lot of this requires  
14 telemedicine, the actual aspect of being able to  
15 interact with the provider and a patient, can  
16 avoid more costly subsequent costly complications  
17 of these diseases. This has been shown in chronic  
18 congestive heart failure with home monitoring.  
19 It's been shown with diabetes. We're seeing it  
20 with other issues. What has to be factored in is  
21 the cost avoidance and savings to the system as a  
22 whole. The Congressional Budget Office stated in

1 the review of the bills coming out for health care  
2 reform that telemedicine, for instance, was going  
3 to be incredibly costly. When you factor in the  
4 cost of implementation, that's a death knell.  
5 What you have to look at is the cost-avoidance to  
6 this country that not only improves the quality of  
7 care provided and the wellness of people, but  
8 avoids more costly care that's required if we  
9 don't provide better access, so that has to be  
10 factored in and we have to look at it system-  
11 wide. That's how you'll pay for it so that no  
12 longer will people say we spend more of our gross  
13 domestic product than any other country in the  
14 world on health care but our outcomes aren't that  
15 much better and in some cases worse.

16 We really have to look at it  
17 system-wide, so if FCC is going to look at  
18 broadband for health care, we have to make sure  
19 that we work with the health care community, the  
20 consumer and industry to make sure that we have  
21 systems in place that can actually measure the  
22 improvement in outcomes and the actual

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1 cost-savings, and I believe they're there and if  
2 we look at it system-wide then no longer can the  
3 Congressional Budget Office say this is going to  
4 cost millions and millions of dollars to this  
5 country, they're actually going to save millions  
6 and millions of dollars and improve quality of  
7 health.

8 DR. KAUSHAL: Thank you very much.

9 MR. GARR: We had noticed some activity  
10 on Capitol Hill around this, so you're right.

11 I had a quick question about fiber.  
12 It's been mentioned several times. I'm going to  
13 bridge this off to comments about broadband  
14 definition, I'm going to offer a short commercial,  
15 and then I'd like to ask a question about fiber.  
16 The short commercial is we have a public notice  
17 out asking for comments to help us define  
18 broadband, so you're spot on, this is an issue and  
19 it's something that needs to be addressed, and I  
20 would ask you to look at the questions we've asked  
21 and if you have some idea, we're all ears.

22 Underneath a lot of this, a lot of

1     what's been discussed is a lot of fiber in the  
2     ground in lots of different places. We're very  
3     curious in your experiences as to where has the  
4     barrier been where it literally is stuff in the  
5     ground that's missing? There's been a lot of  
6     discussion about we can't finance it, we need more  
7     speed which may be a service provider issue, maybe  
8     an issue with the types of hardware that we have  
9     on the edges of the network, it may be a  
10    service-level agreement that we don't have with  
11    someone that we wish we had, but where have we  
12    found barriers of the core infrastructure? And  
13    what opportunities do you see to try and push  
14    fiber into the system in different ways?

15               MR. EBERLE: A couple of comments on it.  
16    First, where are the gaps? One of the examples I  
17    cited earlier today was the Nebraska panhandle. A  
18    lot of the due diligence we do before we do any  
19    network is we look at what's available and what's  
20    out there and try to leverage and work with  
21    existing carriers to try to identify that. So in  
22    certain geography, and I think Dale has made a



1 comment about some of the areas that you have,  
2 it's not there, there's one element to it, so I  
3 would say that's an example of that.

4 The second area I would say is a lot of  
5 times it's in the last-mile environment. Some of  
6 these smaller communities where the infrastructure  
7 was the smaller phone company that's always been  
8 there and they're primarily copper plant and not a  
9 lot of upgrades, so there's a limitation on some  
10 of that plant that's there today. I've seen a  
11 bigger development in the middle-mile networks  
12 because there is availability to either build or  
13 buy in some form or fashion or partner and find  
14 national networks to do that with, so I think the  
15 issue is there are some real rural areas that have  
16 it. Then secondly, I think that last-mile  
17 component to it is one of the biggest challenges  
18 because we can create a pretty healthy middle-mile  
19 network and find the right kind of economic  
20 structure and the right kind of sharing. There  
21 are lots of ways to skin that. But when you get  
22 down to that last mile, I think wireless plays a

1 big play in that with the evolution of where  
2 that's going, and secondly, I think may respending  
3 some of the dollars that happen at the last mile a  
4 little differently and incent that the right way  
5 to put the right kind of infrastructure in place  
6 can be a positive way to spend some of the funds.

7 DR. KAUSHAL: Due to timing constraints,  
8 I think that's the end of our first panel. I'd  
9 like to thank everyone for participating. I think  
10 we had some really great and insightful  
11 conversations. We now have I think about a  
12 15-minute break before the second panel.

13 MR. GARR: Thanks, everybody.

14 (Recess)

15 DR. KAUSHAL: We're now going to start  
16 with our second panel. Aneesh will be joining us,  
17 but we're going to put him now maybe last.

18 First of all, Dr. Kaveh Safavi who runs  
19 the Healthcare Business Solutions Group at Cisco.

20 DR. SAFAVI: My name is Kaveh Safavi.  
21 Cisco is a technology and communications company  
22 and we focus on connection people together with

1 information and resources that they need to do  
2 their work. I think this conversation today is  
3 very important because one of the big issues that  
4 we observe is that the challenging triangle of  
5 access, affordability and quality seems to be  
6 locked, every time we pull on one end of the  
7 triangle the other two get twisted, and our view  
8 is that until we change some of the fundamentals  
9 including the notion of supply and demand, we're  
10 not going to make progress. One of the ways to do  
11 that is to eliminate one of the established, basic  
12 assumptions in health care which is that every  
13 time good care occurs there needs to be some form  
14 of physical proximity between the expert and the  
15 patient. I think one of the things I'll take you  
16 through and show you is that we have reached a  
17 point now where you can demonstrate the fact that  
18 I many cases you can achieve of level of care that  
19 is as good as face-to-face care. Now the question  
20 is how do we drive adoption which will be the  
21 subject of this panel.

22 In our view there are five elements that

1 will ultimately to promote or are necessary to  
2 drive adoption of forms of advanced technologies.  
3 One of them is that the technology is both user  
4 friendly and also sufficiently immersive that it  
5 doesn't interfere with the experience of care that  
6 patients and doctors are engaged in. The second  
7 is that there is sufficient amount of broadband  
8 connectivity, the subject of which the FCC has  
9 been dealing with for some time and the panel  
10 talked about. The third is there has to be some  
11 form of an economic incentive or reimbursement  
12 model for which there is a limited one, and that's  
13 a subject of this panel as well. The fourth is  
14 that there has to be a provider system, a delivery  
15 system, that is reorganized to take advantage of  
16 these technologies. I'll give you an example of  
17 that in a moment. Then finally there are some  
18 regulatory issues that also have to be addressed,  
19 things like state licensure issues or practice of  
20 medicine laws, issues that prevent taking  
21 advantage of this technology even if it were  
22 there.

1           Technology has actually matured to a  
2   level where we can demonstrate today that both  
3   doctors and patients in certain situations, in  
4   situations that have historically only been  
5   addressable by face-to-face care, find that remote  
6   can be or telemedicine-delivered care can be the  
7   same or better than a face-to-face visit. I want  
8   to make a point of this because technology is  
9   necessary but not sufficient as we talked about,  
10   but historically telemedicine experience, patients  
11   have usually described their level of satisfaction  
12   as being about 60 percent compared to face-to-face  
13   where their level of satisfaction tends to be 90  
14   percent. What we've demonstrated is that if you  
15   combine a very high fidelity ability to hear and  
16   see with the ability to share information with  
17   remote diagnostic equipment, examine the patient  
18   at a distance and bring some information from the  
19   outside, you will get 90 percent satisfaction  
20   levels. That has not been seen before, and that  
21   has big implications because now we're not talking  
22   about just care for patients who have access to

1 care, but we provide a competitive alternative for  
2 patients even if they're in an already-served  
3 market.

4 That level of interaction does have  
5 certain requirements. From a connectivity  
6 perspective, the examples that we have seen now  
7 have about 10 megabits of connectivity in both  
8 directions. That connectivity has to be very  
9 secure and stable and dedicated. The only way to  
10 get the patient and the physical level of  
11 acceptance high enough is to make sure there is  
12 nothing interrupting. The other part of it is  
13 that this is typically not just the ability to  
14 hear and see, but it includes remote diagnostic  
15 equipment. Remote diagnostic equipment does  
16 consume a fair amount of bandwidth and even as the  
17 marketplace solves for bandwidth around audio and  
18 video, there needs to be this necessary  
19 understanding that other technologies are going to  
20 consume some of that bandwidth as well.

21 The second point around this experience  
22 is that it's not going to be good enough to simply

1 connect one doctor to one patient, and if you look  
2 at our vision here which is connecting multiple  
3 settings of care as well as multiple sources of  
4 information, this is what you discover. We've  
5 done economic modeling that looks at simply taking  
6 a doctor and a patient relationship and separating  
7 them in space, but there is only so much work that  
8 a doctor can do and there is so much productivity  
9 that you can extract out of it. We're really only  
10 going to make a quantum change if we can figure  
11 out how to allow a many-to-many interaction and  
12 that will allow us to do things like balance the  
13 load, let's just say for example a relatively rare  
14 specialty, one that might treat children with  
15 behavioral conditions like a psychiatrist, some of  
16 these physicians are used, some of them are not  
17 used. If you can figure out a way to load balance  
18 that group of physicians across a large group of  
19 patients, then you can begin to get some  
20 efficiencies that aren't going to be found in a  
21 single doctor, single patient interaction so that  
22 there is a level of participation that will not be

1       achieved if you just have a couple of points  
2       connected in even the most robust way, you need to  
3       have broad-based broadband connectivity.

4               The final point that I want to make is  
5       on the issue of reimbursement. There are a couple  
6       of issues that have to be addressed as far as we  
7       can see. Right now there are models for  
8       reimbursement in the rural areas. There is no  
9       real model right now for reimbursement for care  
10      based in the home. There is also no model for  
11      reimbursement where you have multiple physician  
12      participation and physician-to- physician  
13      collaboration. So these are going to have to be  
14      issues that get addressed in addition to the  
15      traditional notion of home.

16             The regulatory issues that we've talked  
17      about such as practice of medicine and licensure  
18      are interesting because they're state issues. It  
19      is possible for example that we might be able to  
20      think about experimenting with Medicaid and  
21      Medicaid reimbursement at least to permit some  
22      level of flexibility and allow some level of



1        experimentation such that we can begin to see what  
2        we can do to solve the problem for Medicaid  
3        beneficiaries who right now, frankly, are unserved  
4        even in a metropolitan area.

5                    I think that there is some role for  
6        government here, but there is also a role for the  
7        private sector, and I would argue that the  
8        presence of a stable and high- bandwidth network  
9        is a necessary step, it's not sufficient, but in  
10       the absence of it the market is not going to move  
11       in that direction. Thank you.

12                   DR. KAUSHAL: Thank you very much. Next  
13       we have Protima Advani who is the Practice Manager  
14       of the IT Insights Program at the Advisory Board  
15       Company.

16                   MS. ADVANI: Thank you. Good afternoon,  
17       everybody. Thanks for having us here. As the  
18       Practice Manager for the IT Insights Program at  
19       the Advisory Board, my primary role is to oversee  
20       the research that is requested by hospital members  
21       around IT strategy. So as you an imagine, right  
22       now the number one issue for everybody is the

1 meaningful use definition and the incentives that  
2 go with this. Obviously, that's not the only  
3 thing that has come to the forefront as a result  
4 of the stimulus bill. Telemedicine, as well know,  
5 the broadband networks did receive stimulus  
6 funding and obviously this is something we are  
7 tracking very closely in terms of how is this  
8 going to change hospital and health system IT  
9 strategy moving forward now that there is actually  
10 an infusion of federal dollars in this space. So  
11 I'm hoping I can share with you what we are seeing  
12 in the evolution of telemedicine, what benefits we  
13 have seen through several studies, but despite  
14 these benefits, what are the barriers that are  
15 limiting hospitals and health systems in making  
16 these investments, and physicians from adopting  
17 them, and there might be some ways we can overcome  
18 some of these barriers.

19 Over the last decade maybe there has  
20 been the expansion of the use of telemedicine.  
21 There are several applications today. It's no  
22 longer just phone-to-phone consults. There is

1 Internet use, there is video conferencing. We  
2 have even seen people use robotic technology to do  
3 surgery in a remote setting. So the applications  
4 for telemedicine have clearly grown. They are  
5 allowing us to treat people in different locations  
6 with very little human contact. They are also no  
7 longer just for chronic care management. What  
8 started out as a way of treating chronic care  
9 patient, today if you look at the bottom of this  
10 slide, every possible service line at the hospital  
11 is being touched by telemedicine, so that the  
12 potential there is enormous. And it's having some  
13 real benefits for the industry at large. You are  
14 not only able to provide greater access to care,  
15 so there are people who would never have received  
16 this kind of care living where they do today, but  
17 also you are providing round-the-clock coverage,  
18 something that you can't afford in some of the  
19 remote areas especially when you have a shortage  
20 of specialists, an aging workforce in the health  
21 care industry, and numerous people needing that  
22 kind of care. Clearly, telemedicine has already

1 started to reduce some of the disparities that  
2 have existed in health care because we are able to  
3 let technology reach so many people so quickly.

4 It's not just about improving access  
5 though. There are several studies out there. I  
6 just listed data from a couple that clearly show  
7 that just putting in telemedicine has helped  
8 reduce rehospitalizations in congestive heart  
9 failure patients, it has reduced ED visits, and  
10 reduced even admissions to nursing homes, so that  
11 it is not just improving access, it is improving  
12 outcomes in care, but also reducing the cost,  
13 something that this nation is very focused on when  
14 you think about the high cost of care,  
15 telemedicine can really help bring that cost down.

16 There are obviously several other  
17 benefits. Not only are patients happier as Dr.  
18 Safavi just mentioned, but it's also the reality  
19 that hospitals benefit. You're investing in these  
20 service lines and sometimes you don't have that  
21 kind of volume in your own market, but this grows  
22 your referral streams and allows you to get the

1 benefit of additional patients, so essentially a  
2 higher ROI on your service line investment.

3           Despite these benefits, this is one  
4 thing that is not a priority for hospitals. Every  
5 year as part of our research process we are always  
6 talking to hospitals and asking, What is the  
7 number one priority for you? What would you like  
8 us to research for you? And in the last 4 years,  
9 telemedicine has not made the top 20 list. So it  
10 just gives you the perspective that despite all of  
11 these benefits, despite all the success stories,  
12 despite the fact that some of the barriers in  
13 terms of technology are dropping and technology is  
14 becoming almost like a utility, it is just not one  
15 of those priorities for hospitals, and let's talk  
16 about some of the reasons why.

17           The number one barrier, no question  
18 about it, is financial constraints. Hospitals are  
19 already spending millions of dollars on clinical  
20 technologies and now more recently obviously on  
21 health IT as well, so when it comes to a  
22 telemedicine program there are not only

1 significant up-front costs of setting up the  
2 program, but the ongoing costs of providing the  
3 costs of providing the labor to support this  
4 program as well as the secure broadband network  
5 that will be required to exchange information  
6 securely so that you're not violating any of the  
7 HIPAA compliance rules. While this is not the  
8 most unpalatable cost, sometimes hospitals are  
9 running into situations where they do find remote  
10 facilities that they would like to partner with  
11 but those facilities have very antiquated systems  
12 that either need to be replaced or upgraded  
13 altogether so that that compounds the cost the  
14 hospital bears. But I think what's been the  
15 biggest deal breaker when you talk to hospital  
16 executives is the reimbursement scenario. If you  
17 look at all the data on this page, when it comes  
18 to telemedicine reimbursement, it just varies so  
19 much by state as well as by payer, with Medicare  
20 having only 27 states to date reimbursing  
21 telemedicine services, and when it comes to the  
22 private payer industry as well. The latest number

1 is 57 percent of private payers were reimbursing  
2 some form of telemedicine and not all services.  
3 Then when it comes to Medicare, Medicare is  
4 clearly only offering it for patients in MSAs, the  
5 medical shortage areas, or in areas with rural  
6 health professional shortages. What's interesting  
7 and counterintuitive to me in that situation is  
8 the whole point of having professional shortage  
9 areas is for PCP shortages, but what you're trying  
10 to achieve through telemedicine is actually  
11 specialist care, so I don't even understand why  
12 Medicare would use that as one of their deciding  
13 factors for whether to offer or reimburse a  
14 service or not. Needless to say, there is a ton  
15 of potential but we're not helping it especially  
16 on the reimbursement front. Another big factor  
17 obviously is the legal liability. I know you just  
18 mentioned the factor that physicians don't want to  
19 have to deal with the differences in state  
20 licensing laws, but from a hospital perspective,  
21 the burden to be compliant with HIPAA and protect  
22 all the patient data within their four walls is

1 big enough, it's expanding with the more recent  
2 stimulus mandates, but it's only going to get a  
3 lot more if they have to protect all of this data  
4 going beyond their four walls to a remote facility  
5 that they have little control over, so that is  
6 definitely a concern, and from a physician's  
7 perspective, there is also the concern of  
8 malpractice. To date I believe there are only one  
9 or two cases, so they don't really have a good  
10 sense of if I get prosecuted for this, what is my  
11 liability here, so that's obviously not helping  
12 adoption.

13 Finally, just my eye on the clock, I'm  
14 not going to get into cultural changes, but as you  
15 can imagine, there's a huge shift in culture for  
16 physicians both adopting technology which is  
17 disruptive to their workflow, but also getting  
18 away from this mindset that I have to have a  
19 face-to-face interaction to be in control of my  
20 patient's care.

21 The question is that there is all this  
22 value. We as an industry are trying in every way



1 to make care more affordable and make it more  
2 accessible to people, there is the potential of  
3 telemedicine and what can we as an industry really  
4 think about as a policy perspective to make this  
5 happen. Fortunately for us there are a few forces  
6 that are converging in favor of hospitals. You  
7 have the federal stimulus dollars and you have  
8 CMS's recent focus on the 30-day readmission rate.  
9 Now hospitals realize that one of the ways they  
10 are going to have to manage care is through  
11 telemedicine if they want to keep patients out of  
12 their buildings at least at that 30-day  
13 readmission rate so that they don't lose payment.  
14 In fact, one study showed an average 250-bed  
15 hospital that has about 1,150 CHF Medicaid  
16 patients over the year. If those patient should  
17 come back in, on average they would see 265 of  
18 those patients back in 30 days and the hospital  
19 would lose over \$1.5 million in CMS denials, so  
20 it's a real cost for hospitals now to avoid this.

21 Of course, all the focus on health  
22 reform is also definitely driving hospitals to

1     rethink the care continuum because if you're going  
2     go toward bundled payments, an accountable care  
3     organization is another factor that's going to  
4     drive hospitals to really look at the care  
5     continuum so they can better manage a patient's  
6     care. But one could argue that hospitals then  
7     will only go after their immediate network because  
8     at the end of the day there is no liability on  
9     them for remote areas which is not part of their  
10    patient population. What's really going to need  
11    to change there is the reimbursement structure,  
12    not just reimbursing them for telemedicine  
13    services, but also if they are going to reduce  
14    admissions, they are going to reduce ED visits,  
15    they are going to get a hit on their bottom line  
16    in that they are not going to see the same  
17    revenues they did, in essence by improving care  
18    they're getting hit by reduced revenues, so is  
19    there a way we can actually incent them for  
20    improving care by compensating them for the loss  
21    that they see in terms of revenues? The one  
22    observation I also notice from other things that

1 have happened from CMS in driving adoption has  
2 been on the CMS front, there is a CED program for  
3 new devices. Back when drug-eluting stents came  
4 out, they offered to reimburse it for hospitals as  
5 an avenue for collecting data, so it's too early  
6 but it's a cutting-edge technology, let's  
7 reimburse it, but you will give us data which will  
8 help us test the efficacy of this new device.  
9 Could we consider something like that in the  
10 telemedicine space? There are new emerging  
11 technologies in telemedicine every single day that  
12 hit the news. Could we be looking at some of  
13 these as an effective way of managing the cost of  
14 care, improving outcomes and reducing inefficiency  
15 in the system and actually reimburse them on a  
16 similar CED-like program? I am way over, so I'm  
17 going to skip the last slide.

18 Finally, on the legal liability front,  
19 this obviously adds a burden on hospitals and are  
20 there ways that we can prioritize the development  
21 of standards both for clinical protocols in terms  
22 of dealing with patients (inaudible) but also the

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1 exchange of data so that we are reducing the risk  
2 liability for hospitals that offers to provide  
3 this care in a remote setting. Thank you.

4 DR. KAUSHAL: Many thanks. Next we have  
5 Dr. Karen Rheuban who is a pediatric cardiologist  
6 and is also the Founding Medical Director of the  
7 University of Virginia's Office of Telemedicine.

8 DR. RHEUBAN: Thank you. Also like  
9 Dale, I am the President of the American  
10 Telemedicine Association and we're thrilled to  
11 have pediatricians at the helm, and it's a  
12 privilege to be here on behalf of all of my  
13 constituencies, UVA and ATA as well, and John  
14 Linkous is here from ATA too.

15 I think one of the major questions we  
16 have to ask is, If you build it, will they come?  
17 The FCC has committed a tremendous amount of  
18 investment in rural and other broadband  
19 applications, schools and libraries, et cetera,  
20 but what are the barriers? What are we seeing  
21 that is causing us not to utilize these networks?  
22 I think that Protima had some very excellent

1 points that she made.

2 Telehealth applications are extensive.  
3 They include video conferencing for patient care,  
4 store and forward or asynchronous transmission of  
5 patient images and data such as teleradiology,  
6 telepharmacy applications, remote monitoring and  
7 home telehealth, mobile health applications are  
8 included within that using wireless technologies,  
9 health information exchange transferring  
10 information from hospital to hospital, clinic to  
11 hospital, believe me I'd be certainly pleased not  
12 to get another request for a telemedicine via fax,  
13 emergency preparedness and disease surveillance,  
14 and of course distance learning for patients, for  
15 health professionals, for our medical students.

16 Partnerships to improve health can  
17 include a host of different constituencies, with  
18 academic connections and academic community  
19 hospital linkages. The Department of Defense and  
20 Department of Veterans Affairs have heavily  
21 invested in telemedicine, as are rural clinics  
22 such as our federally qualified health centers,

1 veterans, CBOP, free clinics, health departments,  
2 correctional facilities, school health  
3 applications, nursing homes, with home telehealth  
4 allowing people to age gracefully at home in  
5 place. The workplace is another great place for  
6 telemedicine applications, and medical offices and  
7 retail clinics, all applications that have  
8 embraced telehealth.

9           What are all about? We are about  
10 enhancing access to care and this is a slide,  
11 Aneesh has been there, the Remote Area Medical  
12 Clinic in southwest Virginia. The Remote Area  
13 Medical Clinic is all over the country now and  
14 every time they set up, thousands and thousands of  
15 unserved patients show up, and as Protima said,  
16 it's not even that they don't necessarily have  
17 access to primary care, many of these individuals  
18 are actually insured. In the clinic in Virginia,  
19 almost 50 percent of our patients lining up are  
20 insured Virginians who still don't have access to  
21 care for a host of reasons, and this is what we're  
22 all about, trying to solve this solution. So it

1 clearly goes beyond the Federal Communications  
2 Commission, but you are a very important player in  
3 this game for us.

4           Why do telehealth? For patients, it's  
5 the benefits of timely access to locally  
6 unavailable services and improved triage of  
7 patients when transfer is required. It's much  
8 better to have the specialists involved from the  
9 very git-go. Dale is a neonatologist and I'm a  
10 pediatric cardiologist and our patients arrive in  
11 better shape when they come with telehealth as  
12 part of the initial evaluation, with improved  
13 quality of care, and with reduced readmission for  
14 the same diagnosis, you're hearing about this  
15 again and again. It is an important priority for  
16 our government, with improved chronic disease  
17 management, and we can spare the patient the  
18 burden and cost of unnecessary travel.

19           The benefits for health professionals.  
20 We have tremendous workforce shortages we're  
21 facing and an aging medical profession. This  
22 gives professionals access to consultative



1 services. Each consultation is inherently  
2 educational. The referring physician and provider  
3 learn from the telehealth encounter. It provides  
4 them access to continuing medical education.  
5 There's a mandate in most states for renewal of  
6 our licenses that we have CME, but if you have to  
7 travel a long distance, people don't get it. And  
8 it reduces the sense of isolation of our rural  
9 health providers, and that's a continual problem  
10 that we hear.

11 For rural communities, we know that more  
12 than 85 percent of patients remain in the local  
13 community environment when they're served via  
14 telehealth and that has tremendous benefits  
15 because care in the community is at a lower cost,  
16 and it enhances the health care and local economic  
17 development models in that community by keeping  
18 the community hospital open. If a patient stays  
19 in the hospital, that keeps the hospital viable,  
20 and the hospital is often the major employer in  
21 any community. So we believe that telehealth is  
22 good for rural development and for society with

1 lower cost of care, improved health care outcomes,  
2 and we even like to say that telehealth is a green  
3 technology because you don't burn gasoline when  
4 you're using telehealth.

5 I want to show some quick innovative  
6 applications. Telehealth can be used to reduce  
7 infant mortality. There's a phenomenal project  
8 that's based in Arkansas called the Arkansas  
9 Angles. They have demonstrated a 26 percent  
10 reduction in neonatal mortality by using  
11 telemedicine to provide early access to prenatal  
12 care. And thanks to our past Secretary of  
13 Technology, our institution, the University of  
14 Virginia, has launched a similar program using  
15 funding from our governor's office, the  
16 Productivity Investment Fund. It's well known to  
17 work for congenital heart disease, childhood  
18 asthma, childhood obesity, with school health and  
19 daycare applications that prevent trips to the  
20 emergency room and keep kids in the daycare  
21 setting and parents at work.

22 Other applications that have become

1 mainstream are teleophthalmology screening for  
2 diabetic retinopathy, the number one cause of  
3 blindness, and yet it's not a covered service  
4 under Medicare or screening for retinopathy of  
5 prematurity. There's a great image. That's the  
6 type of image, a digital image that can be sent  
7 over the broadband communications link. With  
8 teledermatology, we face tremendous shortages in  
9 dermatologists with parts of Virginia having to  
10 wait for 6 months to a dermatologist, and through  
11 telemedicine we can improve the efficiency of our  
12 dermatology population. As for telemental-health,  
13 there are tremendous shortages in mental-health  
14 providers. And many of the specialty societies  
15 have partnered to develop standards, and I'm  
16 pleased to have my colleague Nina who has done a  
17 tremendous amount of work to develop these  
18 standards with the specialty societies.

19 Other applications including acute  
20 stroke intervention. The American Heart  
21 Association and Stroke Association have now  
22 created a consensus statement that says that

1       telemedicine is an important tool in the care of  
2       patients with stroke. Time is brain, and if you  
3       can get TPA within 3 hours of onset of the stroke,  
4       we can spare the brain, so it's an important tool.  
5       With mobile digital mammography applications you  
6       can broadcast the mammograms back to the  
7       interpreters to the mammographers either  
8       wirelessly, with satellite technologies or using  
9       land-based communications services. That means  
10      early diagnosis of breast cancer and lower cost of  
11      care. Then we should also not forget remote  
12      access to clinical trials and community- based  
13      participatory research, and using telemedicine  
14      technologies with our rural and community-based  
15      partners is a terrific tool to increase access to  
16      these types of activities.

17               Why are we doing this? You've heard  
18      reference again to 30-day readmission for the same  
19      diagnosis. There was a publication, the "New  
20      England Journal of Medicine," that says that  
21      Medicare in 2004 \$17.4 billion on unplanned  
22      hospitalizations. For hospitalizations for the

1 same DRG, 30 days is 20 percent of patients,  
2 within 90 days it's 34 percent and within a year  
3 it's 56 percent of patients. Remote monitoring  
4 and home telemedicine technologies can reduce that  
5 readmission rate. It's been well proven for heart  
6 failure, chronic lung disease, diabetes, and it's  
7 been proven in vertically and horizontally  
8 integrated environments such as the VA in their  
9 Care, Coordination and Telemedicine Program, with  
10 a 19 percent reduction in hospital admissions, a  
11 25 percent in reduction in hospital days.

12 How can the federal government help us?

13 The federal government has spent billions of  
14 dollars in telemedicine technologies and rural  
15 broadband and yet we still have problems with  
16 Medicare reimbursement. Medicare reimbursement is  
17 only for the rural Medicare beneficiaries and that  
18 means 79 percent of Americans who are Medicare  
19 beneficiaries don't have access to telemedicine  
20 technologies. I think it was Dale who mentioned  
21 the challenge of the Congressional Budget Office  
22 in the scoring of these technologies. CBO scored

1 telemedicine at hundreds of millions of dollars  
2 with BIPA 2000, and yet over the ensuing 5 years  
3 spent only \$2 million per year covering  
4 telemedicine services, that's hundreds of millions  
5 of dollars scored and \$2 million a year in  
6 reimbursements. Store and forward is only for  
7 Alaska and for Hawaii. There's a lot that can be  
8 accomplished with store-and- forward technologies.  
9 Medicare don't have a federal mandate. I believe  
10 there are more than 30 to 35 Medicare programs  
11 that are reimbursing some services, and in  
12 Virginia we're very fortunate because we have  
13 rural and urban. Other payers, again the VA and  
14 the Department of Defense, do pay, but the private  
15 pay environment is very limited in terms of what  
16 they reimburse, so there's a lot that can be done.

17 Dale mentioned alignment of federal  
18 policies and definitions and we face different  
19 definitions of rural. I can get a grant from the  
20 federal government to set up a telemedicine system  
21 at a federally qualified health center, under USDA  
22 rules, rural-rural, under the Appalachia Regional

1 Commission it's rural-rural, but they're  
2 considered a metropolitan statistical area because  
3 of their adjacency to a city of 60,000 in the next  
4 state and so we can't be reimbursed to be provide  
5 that service. We really need to fix this.  
6 Medicare has a conditions of participation  
7 standards for hospitals which require that every  
8 one of our doctors be credentialed and privileged  
9 at every single hospital in which we serve.  
10 That's crazy. First of all, it's expensive to  
11 credential and privilege a physician. There is no  
12 one in that community hospital who really has the  
13 ability to credential and privilege our doctors.  
14 That's the whole reason they need us because they  
15 don't have those services available. So that's  
16 another CMS effort that really needs to be dealt  
17 with, and it's counter to the Joint Commission's  
18 Telehealth Standards. So we have recommendations  
19 for adoption, it will drive adoption in health  
20 care payments. There are other issues. You've  
21 heard about licensure and telecommunications  
22 costs, and we are very grateful to the FCC for the

1 Rural Health Care Support Mechanism for the pilot.  
2 It just needs a little bit of work. We do know  
3 that telemedicine providers nationwide have said  
4 thank you to the FCC for giving us this access to  
5 affordable broadband. Now we just need to fix it.  
6 We also need to fund research projects, that's  
7 NIH, cost-effectiveness and savings, that's the  
8 Office of the National Coordinator, the Agency for  
9 Health Care Research and Quality, industry  
10 standards working with NIST, and so we have a  
11 great opportunity before us with ARRA and we just  
12 sustain this federal investment. We need to make  
13 it work with sound federal policies to facilitate  
14 sustainability and integration into mainstream  
15 medicine will make it all work. Thank you.

16 DR. KAUSHAL: Thank you very much. Next  
17 we have Nina Antoniotti who is the Program  
18 Director at the Marshfield Clinic Telehealth  
19 Network.

20 DR. ANTONIOTTI: Thank you. This is an  
21 interesting panel to be on because I disagree with  
22 something almost every has said. I run a



1 telemedicine program in Wisconsin. We are very  
2 successful. We have excellent reimbursement. We  
3 have broadband out the wazoo and that's not for  
4 lack of trying, but we do have some critical  
5 issues that I believe this group can really be  
6 effective in changing for us.

7 I will leave here tonight and tomorrow I  
8 will present to patients, one a pediatric  
9 neurology patient and the adult I think is  
10 pulmonary medicine, from a rural clinic, in the  
11 afternoon I will meet with some docs to set up a  
12 practice, and in the late afternoon I will work on  
13 setting up eight nursing homes as sites to receive  
14 telehealth services. So if there's any part of  
15 telehealth that hasn't been touched by me, I'm not  
16 sure I know what it is.

17 What I want to do today is something a  
18 little bit different than everybody else has done.  
19 I'm going to take you with me out there where  
20 telehealth is practiced and show you a little bit  
21 about what all of this really looks like, and when  
22 you think about public policy and what needs to

1 change, you have that picture in your mind.

2 Marshfield Clinic is a physician service  
3 organization, a multispecialty clinic. We have 43  
4 regional centers. We are the only service health  
5 care provider in 90 percent of central and  
6 north-central Wisconsin. Seventy percent of the  
7 care we deliver out of \$3.5 million encounters a  
8 year, and that's not labs and X-rays, that's just  
9 seeing patients is in rural areas. We do that  
10 with about 1,100 physicians and allied  
11 practitioners. We are very fortunate to have  
12 built over the last 45 years some infrastructure  
13 that helps support delivering care at a distance.  
14 That's what we've all been talking about today,  
15 how do you get this job done at a distance when  
16 the needs are so overwhelming? We have our own  
17 electronic medical record that is probably one of  
18 the first or only noncommercially delivered  
19 medical record in the country. We developed it  
20 because we needed to take better care of patients,  
21 and we needed to do that at a distance. We have  
22 all of this infrastructure in place that you see

1 on the slide so that anywhere in north-central  
2 Wisconsin, a phone call to another clinic is a  
3 five-digit phone call. All of our long distance  
4 costs 3 cents a minute. The minimum bandwidth we  
5 have between a tiny, tiny, tiny little clinic with  
6 a nurse practitioner 3 days is a 10 meg fiber  
7 connection and that again isn't without a lot of  
8 sweat, blood and guts on the road hammering  
9 telecommunications carriers and getting pricing  
10 that at least makes it affordable for us. We've  
11 spent hundreds of millions of dollars over the  
12 last 40 years getting this done, and we spent  
13 about \$3 million a year just in telecommunications  
14 costs just to get this done.

15 We also provide access to patients  
16 through our Web portal so they can see parts of  
17 their medical record, they can leave information  
18 for providers, they can download information about  
19 their blood pressure and things like that right  
20 into the electronic medical record, and they can  
21 also access health information so that they can  
22 take better care of themselves. We believe that

1     telehealth is really a tool for access. Like  
2     Karen has said and Protima, it's really about  
3     providing access not only for patients to  
4     practitioners, but also practitioners to patients,  
5     and that's where it's not feasible or practical or  
6     realistic to have the practitioner or the patient  
7     travel. If you're a pediatric cardiologist and  
8     you've got one patient in Ladysmith and that  
9     patient cannot travel to see you, you cannot do  
10    outreach there. The environment of health care  
11    does not support that. We need to look at and use  
12    this technology to provide access in different  
13    ways.

14                These are all the services that  
15    Marshfield Clinic provides, and when you look at  
16    that some of those require very complex physical  
17    exams during an interactive clinical consult.  
18    Others are pretty much straightforward, checking  
19    in, exchanging information verbally, making  
20    face-to-face contact which you do when you use  
21    telehealth. So that the needs are different in  
22    each of those, but we have about 45 clinical

1 services, interactively we see about 4,000  
2 patients a year, and we do this everywhere. One  
3 of the questions in the earlier panel was, Where  
4 do you need broadband? You need it everywhere.  
5 You need it in the cities, you need it in the  
6 senior citizens' centers, you need it in the  
7 schools, you need it in the Head Start clinics.  
8 I'll give you a little bit of an example of our  
9 Head Start program a little bit later. But again,  
10 anywhere a person has health care needs is where  
11 we need to be supplying broadband access, and we  
12 need to do that at speeds that support the  
13 clinical activity. Obviously as you go up the  
14 spectrum it gets more expensive, but we do  
15 everything at 384. That's a lot lower than some  
16 of the suggestions that have been made today, but  
17 again you pick the bandwidth to meet the clinical  
18 need.

19 This is an example of a telehealth exam  
20 room. It's interesting that hospitals perceive  
21 that this costs a lot of money. You can build  
22 this for under \$10,000, and if you have to bring

1 the line in-house yourself because no one else  
2 will help that fund that for you, that's an  
3 additional about \$5,000, so with \$15,000 you can  
4 put this in place and our patients have access to  
5 specialty services. So it's not that much money,  
6 and I'll talk a little bit about some of the ways  
7 we can fund that. This is what the doc's side  
8 looks like. That's about \$200. Again, there are  
9 ways of getting this done that are cost-effective  
10 so that we can leverage the funding we do have to  
11 get patients seen.

12 Here is where your big bucks are  
13 sometimes, and that's in your clinical exam  
14 technologies, but this is what they do. This is a  
15 picture that I get 300 miles away from a clinic on  
16 my computer that's much, much better than I can  
17 see in person, and these are the types of images  
18 that we can either send, store and forward as a  
19 digital image attached to an email, or we can show  
20 them live through a 10 meg connection at 512  
21 kilobits. Anytime you need stethoscopy, the whole  
22 changes a little bit in that you really need to

1 have control over that bandwidth and the quality  
2 of service, so again that's more about bringing  
3 that line in-house and having more control over it  
4 than I might if I'm using the Badger Network in  
5 the State of Wisconsin because again stethoscopy  
6 is a clinical diagnostic tool and I need to be  
7 able to ensure that the transmission speeds and  
8 the bandwidth in that network are sufficient to  
9 allow me to provide good clinical quality data.

10 We've talked a little bit about  
11 telestroke. Telestroke really is an interesting  
12 animal because this is one time where multiple  
13 different organizations come together and work  
14 together, share bandwidth and share information  
15 across that network in order to reduce the  
16 morbidity and mortality rates associated with  
17 acute ischemic stroke. What this really requires  
18 is significant bandwidth authentication systems,  
19 gateways and other types of hardware that may not  
20 normally be needed in traditional clinical  
21 telemedicine activities because the key here is  
22 getting docs in from their houses. To get docs in

1 from their houses with video and access to  
2 electronic medical records requires a whole level  
3 of sophistication that we might not need in  
4 traditional outpatient telemedicine. Telepharmacy  
5 is another application where we're leveraging our  
6 clinical specialists in a way that we couldn't  
7 otherwise and patients would go without care, and  
8 that's really what telehealth is about for us in  
9 Wisconsin and many other areas, that patients  
10 simply would go without care. We have a sterile  
11 products pharmacy where we have five specialty  
12 pharmacists for 43 regional centers and they cover  
13 seven regional cancer centers from three locations  
14 over telepharmacy so that those patients can get  
15 chemotherapy, they can have access to clinical  
16 trials, that if their side effects or questions,  
17 the local practitioners can meet right with that  
18 specialty pharmacist. Because of that experience  
19 asked what about all the communities that don't  
20 have retail pharmacies? What about those patients  
21 who go without their medications for 2 or 3 days  
22 because they have to wait for something to get



1 mailed or they have to travel while they're ill to  
2 get prescriptions? Because of our experience  
3 here, we were able to change public policy in  
4 Wisconsin and we now have telepharmacy legislation  
5 on the books. Again, our experiences can easily  
  
6 drive public policy if people know what we're  
7 doing and how easy this works and that the  
8 clinical benefits are amazing.

9           As for our Head Start program, we got  
10 grant funding which I think should always be  
11 venture capital, and we linked 10 Head Start  
12 centers for medical and dental applications. The  
13 reason we did this is this. Every day about  
14 15,000 kids who are 6 to 8 years old in Wisconsin  
15 are sitting in classrooms with their mouths  
16 hurting, so what we did was we connected them to  
17 dental screening and prescriptive exams, and you  
18 can see some of those clinical outcomes there.  
19 The number of kids who floss and brush goes up  
20 dramatically, the number of kids who have access  
21 to sealants goes up, and over again and over again  
22 we have clinical applications and clinical

1 outcomes that are proven to improve the health and  
2 well-being of our communities.

3 Here is the problem with that: 10 Head  
4 Start sites, 10 T-1's at about \$13,000 a month,  
5 \$156,000 a year. USAC funding brings that down to  
6 about \$2,800 a month. The grant funding is going  
7 to kind of run out here pretty soon. When I went  
8 to the Head Start director and I said you got to  
9 start thinking about taking this over, she asked,  
10 "How much talking about?" I said \$2,800. They  
11 didn't speak for a full 5 minutes. So this is  
12 going to seriously put this program at risk and  
13 our kids are going to go back to sitting in  
14 classrooms 2 years from now with their mouths  
15 hurting. This is where we can have impact in  
16 trying to reduce the costs. We can get the  
17 access. We've talked to our telecos. We've  
18 convinced them to build out, and I think we should  
19 actually go to the farthest point and build back.  
20 With this building from the center out, let's go  
21 out there and build back and I think that would  
22 work a lot better. This is an example of really

1 where the costs are going to be an issue in  
2 eliminating access.

3 One of the questions posed to this panel  
4 was, How can doctors and patients easily learn how  
5 to use telemedicine? I think this is really a  
6 no-brainer. You just have to get telehealth to  
7 them. We have no problem with patients wanting to  
8 use this. Our patient satisfaction is 89 percent  
9 and that's about 20 percentage points higher than  
10 in-person care, because we think about what it is  
11 to be a patient and a provider in that health care  
12 interaction and then we make telehealth make that  
13 work. We really just need to get telehealth out  
14 there to them through all of those things that  
15 we've been talking about today.

16 There are well-established telehealth  
17 experts all over the country. I get calls every  
18 week. I help about 10 programs every year, and  
19 when I'm doing with them they are successful in  
20 telehealth. So if there are 10 of me out there,  
21 that's 100 programs a year that are going to get  
22 started. We need to be connecting these people

1 together in ways that are meaningful and useful,  
2 and the way to do that is through organizations  
3 like the American Telemedicine Association. There  
4 is not another organization in the world that has  
5 more impact in moving physicians and patients  
6 forward in using telehealth and anything that  
7 government agencies can do to support nonprofit  
8 organizations like American Telemedicine in  
9 promoting telemedicine, we should be thinking  
10 about those things.

11 Then the other issue is many telehealth  
12 entrepreneurs. People are using Skype, MySpace,  
13 they're taking junk out of the garage and  
  
14 developing technologies that actually work well  
15 that are really revolutionizing how we're doing  
16 this. Another question is about barriers to  
17 telemedicine and we've heard a lot about  
18 reimbursement. There are a couple of things going  
19 on there that I'll talk about, organizational  
20 readiness, that people just need to understand  
21 that they can do this, hospitals need to  
22 understand how easy this is to do. Broadband

1 costs for private practices need to be supported,  
2 and as for technology costs, I think we're missing  
3 the internal piece. You can bring the line to the  
4 door, but if people can't get it in the door,  
5 that's where we need some funding as well. And  
6 lack of standards, again the American Telemedicine  
7 Association has been instrumental in getting  
8 standards developed and published, and people are  
9 waiting for standards, docs are waiting for  
10 standards, the payer is waiting for the standards,  
11 and standards are going to be critical in moving  
12 telehealth forward. So I think that people really  
13 need to think about the money they get from grants  
14 and others as venture capital and have a good  
15 business plan in place to move this forward. And  
16 like I said, patients want this. You will have no  
17 problem with patients whatsoever. Unfortunately  
18 for reimbursement, Medicare has been allowed to  
19 develop a regulatory process that promotes  
20 inequity and keeps beneficiaries from getting care  
21 they need, and there is no other simple way to put  
22 that, no nice way to put it. We need to change

1       that. It is inappropriate for my dad who is 92  
2       years old to pay \$90 to be taken from the skilled  
3       nursing facility across the street to a  
4       physician's office to get a telehealth visit with  
5       an infectious disease doc and then pay \$90 to be  
6       transported back across the street again because  
7       Medicare doesn't pay for telehealth in skilled  
8       nursing facilities. That's inappropriate and we  
9       need to have that changed. With Medicaid, the  
10      State of Wisconsin pays for everything because I  
11      wrote the law. We just need to go out and  
12      starting working with Medicaid agencies and  
13      helping telehealth programs create the fiscally  
14      meaningful argument, and there's data out there.  
15      Again, I don't mean to beleaguer, but the American  
16      Telemedicine Association has an initiative to help  
17      programs understand how to move forward with  
18      reimbursement.

19               The other big issue is chronic-care  
20      management. CMS again doesn't pay for chronic  
21      care over telehealth for two of its neediest  
22      populations, people in skilled nursing facilities.

1 We have a physician group demonstration project at  
2 Marshfield Clinic. We must have saved CMS last  
3 year. We get paid back part of that money we save  
4 them, so they already have a model in place for  
5 everything we've talked about here in terms of  
6 reimbursement. What they're concerned about is  
7 fraud and abuse, and again, that to me is a  
8 no-brainer because they've been paying for  
9 teleradiology for about 40 years now, and if you  
10 could have fraud and abuse, that would be the  
11 place, yet we have no experience with that in the  
12 teleradiology applications. So what are we  
13 waiting for? The bus is not going to come down  
14 the road unless we're driving it. I know I'm way  
15 over time, but these are the things that I think  
16 we need to get done. We need to fix the Medicare  
17 reimbursement issues, and that's all the things  
18 that we need to do with Medicare and Medicaid.  
19 Again, the standards, we need to find some way to  
20 fund organizations like the American Telemedicine  
21 Association who have clearly shown some leadership  
22 in this area to develop those standards on which

1 Medicare and Medicaid and private payers and  
2 credentialing agencies will look.

3 Then from a broadband perspective, I  
4 think there are lots of things we could do. We  
5 can certainly increase funding for USAC. We can  
6 allow USAC to fund in-house infrastructure. I  
7 think that for all of those ineligible  
8 practitioners or organizations wipe that out and  
9 let people based on need apply for USAC funding.  
10 I believe we need to change some of the funding  
11 programs like NTIA and TOPS and RUS to be more  
12 service oriented. If you require people to  
13 provide service whatever it is, the broadband will  
14 come with it, so you fund the service and you fund  
15 the broadband and that will be sustainable.

16 We've not quite gotten there. We don't  
17 want to crash and burn on the way here. We've got  
18 a lot of excellent things in place, we just need  
19 to build on that model, but we also need to be  
20 really careful that we don't get frozen in place  
21 because we could make this really complicated, but  
22 in my view it seems to be really easy. We know



1       where we are and we know where we need to get.

2       Thank you.

3               DR. KAUSHAL:   Thank you very much.

4       Lastly we have Aneesh Chopra who is the current  
5       CTO and Associate Director for Technology in the  
6       White House Office of Science and Technology  
7       Policy.

8               MR. CHOPRA:   I love those graphics.  
9       That was fascinating.

10              My very first experience with  
11      telemedicine was a visit to a clinic in  
12      Charlottesville.   About 5 minutes before my  
13      arrival the host of my visit was greeted by a  
14      phone call or a telemedicine call by a rural  
  
15      hospital that had a patient not even a week old  
16      maybe, and the patient had cardiac conditions that  
17      needed immediate evaluation and ultimately needed  
18      surgery.   In prepping for my visit, the host of  
19      that clinic had actually saved that child's life,  
20      that of course being Dr. Karen Rheuban who is  
21      sitting to my left.

22              Telemedicine has been a very important

1 part, but has served in many cases as a secondary  
2 component of the health care system. What we are  
3 about to discuss today and the reason why this  
4 seminar as part of the National Broadband Plan is  
5 critical is that we cannot move forward in  
6 advancing our nation's health care reform goals  
7 without the appropriate use of technology in  
8 health care, and telemedicine is a key component.  
9 I say that as the President's senior adviser on  
10 technology matters. I say it because I've seen it  
11 firsthand, and now the question is how do our  
12 public policy barriers and opportunities for  
13 improvement engage on this important question.

14 I'm going to spend the primary set of my  
  
15 remarks talking about the opportunity for  
16 innovation through telemedicine and I'm going to  
17 do so in three pieces. You've heard a lot of  
18 these themes and so I'll do my best to share as I  
19 look at this from my vantage point serving the  
20 President. First, if we are moving toward a  
21 health care system that works, one that rewards  
22 quality, lowers costs and improves access, it is

1 impossible to envision a scenario where we don't  
2 rethink how our payment structures work or how we  
3 create the incentive market conditions if you will  
4 to get a higher priority order for technology.  
5 Protima shared with you the early work around the  
6 President's budgetary impact on the 30-day  
7 readmission program. Karen had shared with you  
8 data from the VA that telemedicine had been a tool  
9 used to reduce readmission rates some 19 percent I  
10 think was on your slide. What we're looking at in  
11 just our payment reform baby step which is the  
12 fiscal 2010 budget request will essentially create  
13 the market conditions where it's now in the  
14 economic interest of our hospitals to find ways to  
15 stay connected. We may do so through formal  
16 channels. There may be consults that are done in  
17 the home perhaps. There may be something as  
18 simple as a two-way pager that's invoked that  
19 would require one to provide data on perhaps their  
20 health status that could be fed into a database  
21 for analytical purposes. But it creates the  
22 market conditions that naturally would encourage

1       and inspire an increase in the adoption rate. By  
2       the way, I used to work at the firm of Protima's  
3       today and I remember my very first case study back  
4       in 1997 celebrating the use of telemedicine as a  
5       way to reduce readmission rates. 1997. It's  
6       fascinating how we've got the data to prove it  
7       today what we'd seen in the market back in 1997.

8               The second question is that we are  
9       clearly in a scenario where we will be  
10      establishing a digital foundation. Much of the  
11      discussion and the imagery that Nina had shared  
12      was about the experience process, \$10,000 or  
13      \$15,000 for the experience kit to communicate back  
14      and forth. But my point in this second bullet is  
15      that the power of data will allow us to create new  
16      capabilities that we may call telemedicine or  
17      health IT powered care, we'll have some acronym  
18      that people who do this for a living will do a  
19      better describing it than I can. My point is we  
20      are ever increasing the base of data upon which we  
21      can make decisions. Football season just started  
22      and I'm a Pittsburgh Steelers fan and so we had a

1       wonderful week. I'm very pleased. It was very  
2       stressful on Thursday. But if you think about it,  
3       had the Steelers lost Thursday night, and I was in  
4       a despondent mood and I was thinking about what I  
5       could do to pick me up or cheer me up, I would  
6       guess or bet that the good people at Best Buy and  
7       others would figure out exactly the right  
8       promotion to run based on their transaction data  
9       to maximize my ability to buy a plasma TV so that  
10      when they play the following week I might have a  
11      more richer experience. I say that with  
12      celebration for a retailing sector who has figured  
13      out how to take advantage of data to make better  
14      judgments, but then to invoke the challenges we  
15      face in health care.

16               I spend a great deal of time in the R&D  
17      world, cancer care being among the most important  
18      in my mind for us to get right. Despite the fact  
19      that we spend record billions in research, less  
20      than 3-1/2 percent of the nation's cancer patients  
21      have data captured in any meaningful repository  
22      because they're a part of a clinical trial that

1 requires such data to be shared. There is no Best  
2 Buy television promotion analogy in the cancer  
3 care community today because that data is now  
4 stored in an environment that would allow us to  
5 make meaningful judgments.

6           When you start to find buckets of data  
7 collected in areas, there will be policy issues  
8 around privacy, security and use cases, we're  
9 going to have a lot of debate about that, but when  
10 you think about the broader question of what would  
11 happen if you could supplement that data, maybe  
12 the physician's notes or research results, with  
13 patient experience and could aggregate  
14 patient-sponsored data alongside these other  
15 components to make a complete ecosystem to make  
16 sure that my treatment plan makes the most sense  
17 for me? There will be new opportunities for  
18 telemedicine to complete that loop. And today,  
19 because I'm worried about my health, every time I  
20 go get a Starbucks latte I go into nutrition  
21 programs on the apps store and I enter in the fact  
22 that I had my grande vanilla nonfat latte, I do

1       that because it tells me how much sugar intake  
2       I've got today and I'm a little bit more mindful  
3       of that that when I eat other things in the day.  
4       This isn't telehealth. What is this? It's an  
5       opportunity for innovation, and we're seeing more  
6       and more of this in that data-driven health care  
7       system we want to have.

8               Which leads to my final premise around  
9       the opportunity to drive innovation, and that is  
10      as follows. We are increasingly living in a  
11      digital world where new platforms are being  
12      created that have the effect of democratizing  
13      access to some of these capabilities. You may  
14      have already said it, I missed your remarks  
15      earlier, but I believe we will reach a tipping  
16      point in our definition of telemedicine when we  
17      move away from the enterprise-to-enterprise  
18      contract negotiations that seem to be at the heart  
19      of these plagued challenges and move more to the  
20      individual's role as the organizer of their care.  
21      When we have standards where thousands of new  
22      devices can plug into their cable set top box or

1     their other in-home networking device, we will see  
2     wonderful opportunities for entrepreneurs to build  
3     applications that will be relevant for me. Part  
4     of what I do for the President is to help  
5     understand what will the world look like when we  
6     wire up the nation's energy grid, wire up the  
7     nation's schools and wire up the nation's health  
8     care institutions. You can't answer the question  
9     of what the world will look like unless you have  
10    platforms upon which more innovation can take  
11    place and we move from the enterprise level  
12    activity to one where we've democratized access to  
13    these capabilities. There will be a hunger for  
14    some of these new tools and services that will be  
15    made available at price points that will be  
16    extraordinarily affordable, and I look forward to  
17    celebrating what I can do to remove policy  
18    barriers and to encourage the adoption of these  
19    things. We have begun conversations at the FDA on  
20    how their governance around medical devices  
21    affects some of these issues, we've begun the  
22    issues of our payment system around these



1        questions, we've around how our investments both  
2        in broadband through the President's BTOP program  
3        and the RUS funding components in the stimulus  
4        package, plus the health care IT investments, plus  
5        all the myriad investments that we're making as  
6        part of our ongoing operations within NIH  
7        infrastructure, within HERSA, and within all of  
8        the other agencies, Indian Health Services, VA,  
9        DOD and so forth. We are going to do our best to  
10       engage on these issues and look forward to working  
11       with you.

12                    I'll end with one final broad notion  
13       because Karen presented the data or the picture of  
14       the RAM clinic just to reinforce the notion. This  
15       debate around telemedicine and the importance of  
16       health care is about invoking a new spirit of  
17       community, what we refer to in Virginia as the  
18       spirit of commonwealth and what the President  
19       keeps talking about which is reengaging the  
20       American people in our democracy. This notion  
21       that we're going to make these big changes at  
22       agencies, they can and should happen, but they

1 will take time. But in the here and the now in  
2 the next 30 days, 60 days, 90 days, 120 days, in  
3 the spirit of commonwealth we will be making  
4 judgments that will help to move this ball forward  
5 whether it be in data standards, today we  
6 announced that I'll be chairing an implementation  
7 effort on data standards so we can move that ball  
8 forward faster and get the feedback on the ground,  
9 whether it be in our stimulus investments in the  
10 near future, whether it be in engaging the private  
11 sector to do what it's been doing naturally and to  
12 invoke more entrepreneurial activity in this  
13 space. The spirit of commonwealth will allow us  
14 to bring some of these new applications forward  
15 while we wait to work on some of the larger policy  
16 challenges are before us. That's our mission, and  
17 it's been a pleasure to be here today and I look  
18 forward to your questions.

19 DR. KAUSHAL: Thank you very much. The  
20 first question is I think the panel has outlined  
21 the current capabilities of telehealth, and Aneesh  
22 just went into some of the future considerations

1       that they're looking at. I'm going to ask the  
2       same hard question I asked the first panel, What  
3       do you think will be the connectivity requirements  
4       to really empower what we have today, but more  
5       importantly, all the things that Aneesh has  
6       discussed that are coming down the line?

7               MR. CHOPRA: I'll make one observation  
8       and let you all go quickly. For those of you who  
9       haven't read the meaningful use proposed  
10      definitions, that is, the federal advisory  
11      committee that advises Secretary Sebelius through  
12      Dr. David Blumenthal in the health care IT space  
13      has identified a set of clinical outcomes goals  
14      that heretofore my dear friend Farzad Mostashari  
15      keeps referring this to the challenges of  
16      switching from a world of nouns to a world of  
17      verbs, much of what we saw today and we've been  
18      talking about has been the world of nouns, what  
19      equipment do we buy for specific things that have  
20      to be reimbursable and so forth? The verbs are to  
21      what end, and you heard a great deal of that from  
22      Karen's remarks about some of the use cases. The

1 federal advisory committee that recommends on what  
2 the meaningful use definitions should be gives you  
3 a wonderful window. So the question to this group  
4 is, How can telemedicine provide the  
5 most-effective business case to advance those  
6 outcome goals that are required for those who are  
7 engaged in the definition of meaningful use for  
8 reimbursement? That interesting twist, if that  
9 loop is closed, will be a big opportunity for this  
10 industry.

11 DR. KAUSHAL: Please go ahead.

12 DR. SAFAVI: I think that for telehealth  
13 to be transformative, to have a material impact on  
14 the relationship between access and quality,  
15 you're going to have to have the level of  
16 connectivity that we are seeing in the most  
17 advanced forms now, and it's going to have to be  
18 managed so that one can dependably perform a  
19 medical exam at that sort of a distance. People  
20 will dabble with telemedicine at lower bandwidths  
21 and less reliability. But you don't really  
22 introduce a transformative impact until you have

1 the ability for face-to-face care to compete with  
2 care at a distance, and for it to do that you're  
3 going to have to have this kind of experience. So  
4 our current examples, 10 megabits both directions  
5 and stably managed, now it also has to also reach  
6 to places that patients typically are and not just  
7 institutions, in the community where the doctors  
8 are and where the care is provided and potentially  
9 all the way to the home. I think until you get to  
10 that stage it's going to be a novelty. It's going  
11 to be useful from a social justice perspective in  
12 terms of meeting the needs of people who have no  
13 access to care, but it's not going to have the  
14 economic in terms of changing the relationship  
15 between supply and demand and affecting  
16 competition.

17 MR. GARR: I'd love to hear from some  
18 others on that particularly Nina who seems to be  
19 doing quite a bit of telehealth with a dialup on  
20 steroids, so if you could tell us a little bit  
21 about what you think the bandwidth requirements  
22 are here.

1                   MR. CHOPRA: That 300K thing threw me  
2                   for a loop.

3                   DR. ANTONIOTTI: This question always  
4                   comes up and I think that we probably should  
5                   either shoot ourselves in the foot or stop trying  
6                   to answer it because every time we answer it it's  
7                   going to be tomorrow it will be different. We do  
8                   telepathology on an Internet connection. If  
9                   that's the only service you're using then you just  
10                  need an Internet connection and an Internet  
  
11                  browser. If you want to have a primary care  
12                  clinic with a doc's PACS, teleradiology, a fully  
13                  engaged electronic medical record where the doc is  
14                  interacting with that EMR and the staff maybe 10  
15                  times for every patient like we have, then you're  
16                  going to need more bandwidth. Our minimum for our  
17                  primary care clinics is a 10 meg line. In many of  
18                  those we have two 10 meg lines. At our one  
19                  tertiary care site we have, I can't even tell you,  
20                  probably 27 100 meg lines. What I believe is the  
21                  need is to have something that's easily scalable  
22                  so that if I put in a 10 meg line and I start to

1 bump the ceiling of that that my  
2 telecommunications carrier can see that and just  
3 bump me up to 20. Then if I maintain that for a  
4 month or two, then he sends me a letter and says,  
5 Nina, you've got to pay for 20 now, and it's not 2  
6 times 10, the cost of that is also scalable.

7 Our interactive clinical visits are at  
8 384 kilobits and you can do everything that you  
9 need to and maintain the level of clinical quality  
10 that we require, and it's pretty darn high. I  
11 have really high standards. We love to run it at  
12 512 and when we go outside of our system we run it  
13 at 768. I have lots of vendors who tell me you  
14 got to have 1.5. No, I don't. At home, and I  
15 live in a very rural area, all my neighbors are  
16 dairy farmers, I have 768 kilobits over wireless  
17 Internet for \$400 a year. If we need to get into  
18 the homes, that's how we're going to get into the  
19 homes at \$400 a year for 768 which is more than I  
20 run on my telehealth visits on my own network  
21 which is hundreds and hundreds and hundreds of  
22 gigs.

1           I think the issue for me is that it  
2       needs to be something that's easily scalable,  
3       that's priced economically so that if I double  
4       that over the course of a short period of time  
5       that I'm not paying double, and that we really,  
6       really look at not creating some standard that  
7       says you have to have minimum bandwidth or you  
8       have to have minimum X, because the minute we do  
9       that we're going to weed out hundreds of providers  
10      and people are going to go without care. What we  
11      should be doing is saying we need systems in place  
12      that are scalable, that can increase bandwidth and  
13      increase speed on demand, and that when people are  
14      thinking about multiple applications, they need to  
15      think about the bandwidth that fits all of the  
16      applications. It's like do you want a Cadillac?  
17      Do you need a car? Do you get the Cadillac or do  
18      you get the Neon? If you've got to take the  
19      President's chief IT person to lunch, I'd rather  
20      have the Cadillac. Again, you think about what  
21      your needs are and go that way.

22           MR. CHOPRA: Let's take a bicycle and



1       save greenhouse gases.

2                   DR. ANTONIOTTI:   How about my  
3       motorcycle?   So I think it's scalable, it should  
4       be an on-demand capacity, and then priced in a way  
5       that again it's economical.   I just don't think we  
6       can answer the question of how much and what's the  
7       minimum.

8                   DR. RHEUBAN:   I agree with Nina in terms  
9       of scalability.   We do our telehealth consults on  
10      slightly higher bandwidth, 768 at a minimum, but  
11      it's very effective and it works.   The better the  
12      image resolution -- HD is even better in terms of  
13      adoption.   To Nina's point that necessity is the  
14      mother of invention, if you don't have anything,  
15      even a choppy connection is better than nothing.  
16      And I would also say we should also challenge the  
17      industry to get better video compression standards  
18      and to do things that will help us make use of  
19      what we have and what we deploy.   I think we have  
20      lots of opportunity.   I agree 100 percent with  
21      Nina that it doesn't have to be the Cadillac, but  
22      I think we certainly need to do more.

1 DR. SAFAVI: I think that the points are  
2 very good, but they're also very telling in that  
3 if you ask the question, do a thought experiment,  
4 let's say we fix the reimbursement system, let's  
5 say we fix the regulatory system, what we took was  
6 a given where we are at in terms of bandwidth. I  
7 don't think you're going to see wide enough scale  
8 of adoption to create the kind of competitive  
9 situation that's going to have a measurable impact  
10 on cost and access until you start to get to the  
11 level of fidelity that people are used to in the  
12 rest of their lives. That kind of bandwidth  
13 doesn't work in my house with teenagers at this  
14 point, so it raises an interesting question which  
15 is absent any option, it's better than nothing,  
16 but I'm not sure that you're going to get the kind  
17 of adoption you need unless you address that  
18 issue. So I think everybody is right, but the  
19 question is what do we really want to accomplish  
20 and at what scale.

21 MR. GARR: That's a good point. No one  
22 should have the impression that we're content with

1 the current situation, so I think all the comments  
2 make sense. But it is interesting that you can do  
3 a lot, and I think that necessity is the mother of  
4 invention is great, but none of us should view  
5 that that's acceptable for sure.

6 MR. CHOPRA: I'd like to twist the  
7 question a little bit. It's very interesting to  
8 hear telemedicine because my impression of the  
9 field is every time I engage on the telemedicine  
10 front it seems like we've figured out how to do 10  
11 more things. Is there a limit here? If you could  
12 answer it in this way, which is to say what's the  
13 potential value of telemedicine to patients? Is  
14 this something where we can get to a third of the  
15 activities that the system does on a regular basis  
16 and can be pushed to telemedicine? Is it 10  
17 percent? Is it 80 percent? What's the limit?  
18 And then what's the ultimate benefit to the  
19 country when you start thinking about if we did  
20 have all this nifty stuff and you were able to do  
21 what you needed to do, what's the potential  
22 benefit? If anyone is willing to quote a number,

1 I'd love it. I totally understand that it's a  
2 slightly unreasonable question but I think it's a  
3 good one to discuss.

4 DR. ANTONIOTTI: We have for a number of  
5 years looked at telehealth and created the  
6 discussion and the arguments that whenever you  
7 have telehealth in place you contribute  
8 economically to the stabilization of a community.  
9 In fact, recently I saw some economic forecasting  
10 tools that showed the economic value to a  
11 community of having a volunteer in your telehealth  
12 program, how many dollars that actually adds to  
13 the community where that volunteer lives. To me  
14 the potential value to patients, and we have lots  
15 of statistics, if you have telehealth in your ER  
16 and that ER is linked to a series of specialists  
17 in a more comprehensive emergency department, you  
18 can avert 80 percent of your transfers. If you  
19 turn that into economic dollars for families, for  
20 patients, for payers, for employers, if you have  
21 telehealth available in a workplace you can reduce  
22 lost days of work by 65 percent; there are lots of

1       these studies out there.

2                   I look at if I can reduce all the  
3       outreach that the docs do at Marshfield Clinic by  
4       80 percent and reduce patient by 80 percent, I  
5       think that's where I can get to easily right now.  
6       If I have connectivity into the home, if every  
7       patient has a telephone and every patient has  
8       Internet so that they can download data and I can  
9       have a video consultation with them at 30 frames  
10      per second, I think that many of our clinics would  
11      almost cease to be, you'd just have to come in and  
12      get your blood drawn if we could figure out how to  
13      do that at home. So I think that we would see a  
14      major shift in how people receive their health  
15      care. And we see it now. If you're building a  
16      remote monitoring technology and it's not in a  
17      cell phone, forget it because people don't want to  
18      stay home and wait for the dang machine to do the  
19      work, they want to be on the go and working with  
20      the mobile device. So we already see a shift and  
21      health care really needs to be convenient for  
22      patient, and telehealth does that.

1           MR. CHOPRA: I think if the question is  
2       asked in what category of health services might we  
3       see the greatest leverage from telemedicine, I  
4       would argue that the prevention and wellness space  
5       has by far the greatest opportunity. In a classic  
6       two-by-two matrix of opportunity to be a lead  
7       candidate for the source of impact and an area  
8       that has yet to be delivering the value we expect  
9       of it, I think that the prevention and wellness  
10      space has had very little system innovation and  
11      that when we do get to solving the problem, it  
12      will largely be driven by technology solutions  
13      mostly powered by a remote monitoring capability.  
14      That's my hypothesis.

15           MS. ADVANI: I would add to say that  
16      with all the focus on telemedicine, anything you  
17      read is about managing of care of people who have  
18      already been in the hospital, so it's  
19      post-discharge management of care or actually  
20      treating of patients in remote locations, so it's  
21      always about somebody who is already suffering in  
22      some way, but really the true potential of

1 telemedicine is preventing care, that you would  
2 never see these people because they can call in  
3 some basic vitals that would keep you tracking and  
4 you would never need to see them. There was an  
5 interesting study I read just before coming here  
6 in Oregon where there was a bunch of seniors who  
7 have allowed this, it's commendable, who have  
8 actually built sensors into their houses and the  
9 grant money is letting them track the cognitive  
10 skills of these seniors on an ongoing basis. I  
11 know it sounds Big Brotherish, but at the end of  
12 the day, these are seniors who don't want to move  
13 to a home, they want to live in their own homes,  
14 and the tradeoff is let us monitor you so that if  
15 something happens, someone can come in, but  
16 otherwise you are free to live as you would in  
17 your own house. Can you imagine not moving them  
18 to a home and not needing that day-to-day care by  
19 somebody watching over them, the cost avoided from  
20 that, purely preventative. These seniors have no  
21 reason other than age to be moved out of their  
22 homes. So again, prevention is probably the

1       biggest.

2                   DR. RHEUBAN: I agree with everything  
3       that's been said. I think what we need to do is  
4       ask CBO to dream large with us because prevention  
5       doesn't factor into their analyses, and that's a  
6       very important element. We've seen a 40 percent  
7       increase in our volumes in the last year. We  
8       don't know what's going to happen when it is  
9       ubiquitous because there will be a tremendous  
10      demand for services. We ourselves have workforce  
11      capacity limitations in terms of what we can do,  
12      and not to mention the entire profession. So we  
13      need to think large and increase training of  
14      health professionals well including in terms of  
15      these technologies.

16                  DR. SAFAVI: May I take that one step  
17      further? I agree with everything that everyone  
18      has said here, but I want to make a point. Aneesh  
19      made a really interesting point which is doing  
20      things that we haven't thought of yet, and  
21      typically with technology the first order of  
22      return is replace, then do more, and then finally



1 do things you haven't thought of. Two examples of  
2 things that might make a big difference where  
3 patients benefit, today if you're going to see two  
4 doctors, you have to them in a row. You go to the  
5 primary care doctor and then go to the specialist  
6 doctor. There is no reason why that has to be  
7 with technology. Imagine if you could go to one  
8 doctor and then bring the other ones in at the  
9 same time. They'd have to rework it. It's  
10 possible.

11 Second, our experience is that patients  
12 view technologically augmented care as better than  
13 face-to-face care because they participate in a  
14 way that they weren't used to. So with an  
15 electronic autoscope, the patient sees the same  
16 ear drum the doctor sees. That doesn't happen in  
17 a regular office visit. They felt more engaged  
18 and expressed a preference when they were examined  
19 once that way and once in a conventional visit and  
20 you could argue that patient preference might say  
21 that that kind of care is better than business as  
22 usual.

1 DR. KAUSHAL: Another interesting point.

2 MR. GARR: Excellent, excellent answers.

3 Thanks very much for that. I'd like to ask a  
4 question that came up in the prior panel that I  
5 put on hold until Aneesh got here. I think it's a  
6 good question and I'd like to spend a minute on  
7 it, and then we'll go around to some of the other  
8 questions that have been asked from the audience  
9 and online.

10 There were several questions on the  
11 panel prior about what efforts are going on in  
12 terms of coordination across the federal  
13 government on health care particularly as it  
14 relates to broadband issues around health care.  
15 It didn't seem to make sense to answer the  
16 question since I knew you were going to be here  
17 soon. I also hope everyone recognizes that the  
18 fact that you are here is evidence of this, the  
19 fact that this is not your first trip, nor will it  
20 be your last trip here, and vice versa. We have  
21 all been spreading out all across the Mall working  
22 with the different agencies that we need to. But

1 given the seat that you sit in, if you could offer  
2 a few comments on what the coordination effort is  
3 across government on these issues, I think that  
4 would be helpful.

5 MR. CHOPRA: Thank you for the question.  
6 When the President thought of the notion of  
7 assigning a role for a Chief Technology Officer,  
8 it wasn't in the traditional sense that I'm  
9 running an engineering department and that we're  
10 designing new government agency structures,  
11 although that may be interesting. I don't know.

12 The idea was twofold. One, we have a  
13 number of national priorities for which technology  
14 will be a meaningful part of the solution but  
15 perhaps had not been more formally organized.  
16 Second, we happen to have a growing technology  
17 economy and we are constantly looking for the next  
18 killer app that will employ thousands upon  
19 thousands of Americans, and hopefully at this time  
20 of economic challenge will be a source of growth.  
21 This is a twofer. This does require coordination  
22 because the word telemedicine itself or health IT

1     may not appear in 85 federal agency subchapter Z,  
2     regulation B, but when you actually figure out  
3     what it is they're trying to accomplish, then you  
4     understand that bringing them around the table  
5     would allow them to think differently about how  
6     they can embrace certain components of technology.  
7     There are a wide range of comfort levels of  
8     technology across the federal agencies, much as  
9     you would imagine there are in all aspects of  
10    society. We have formal organizing mechanisms.  
11    In health IT we are benefited by a National  
12    Coordinator, Dr. David Blumenthal, who is first  
13    rate and among the nation's best. I serve as his  
14    direct liaison in the White House, and so we are  
15    working very closely. In fact, just this very day  
16    I was on conference calls with the VA and a number  
17    of agencies on related issues. So point number  
18    one is we get it. I will probably miss a great  
19    deal of things as well, but the Office of  
20    Management and Budget is doing its best to  
21    capture. Not everything that you might think  
22    could be telemedicine or health IT powered is

1 described as such and there may be programs that  
2 fall through, but for the most part we're getting  
3 great traction.

4 Second, I would say that we're creating  
5 more capacity. I serve as CTO, but part of what  
6 the President wants to do is hardwire a culture of  
7 accountability across the federal government. We  
8 have a Chief Technology Officer newly appointed  
9 within HHS, Todd Park, who himself is an  
10 entrepreneur who came out of a venture-backed  
11 company, Athena Health. Todd is my right-hand  
12 man. So while I do my part, Todd is every morning  
13 and every night focused on how to organize health  
14 IT within HHS, and that job is full- time in and  
15 of itself.

16 More generally I would say we're getting  
17 better at this, and I think the opportunity to  
18 introduce new innovations to the ecosystem is the  
19 second half of the twofer. I am fascinated by all  
20 the new products and services that my friend to  
21 the left and firms like his are producing, and to  
22 the extent that I can knock down barriers, the

1 three levers that I have to support innovation,  
2 one is on standards, and I'm going to be working  
3 like a dog on making sure that this standards  
4 drive innovation and not stifle it. Two is we  
5 have a \$150 billion R&D portfolio. I'm going to  
6 make sure that we've got the right mix in that  
7 portfolio to spur innovation through pushing as  
8 much as I can on the applied R&D fund where  
9 appropriate. In fact, I'm required by the  
10 stimulus package to establish a  
11 research-and-development roadmap for health IT.  
12 Rest assured that health IT will include  
13 telemedicine. Then the third lever would be in  
14 the area of procurement. When we buy stuff,  
15 increasingly we have new and creative ways to buy  
16 stuff that's a little bit more cutting edge, the  
17 use of prizes and competitions and challenges.  
18 That's why I was able to fund Dr. Rheuban's Infant  
19 Mortality Initiative. By the way, because of that  
20 program and others, Virginia's infant mortality  
21 rate has hit its all-time low. It fell 15 percent  
22 I believe in the latest data, and her work will

1 even further contribute to that number.

2 So we are going to apply all levers to  
3 drive innovation in this space. If I'm missing  
4 something, tell me, and we're going to get to  
5 work.

6 MR. GARR: Thanks for that. I'll just  
7 add one point to that. The Broadband Team here at  
8 the FCC has been very pleased how welcoming all  
9 the other agencies has been. Our hope is that  
10 that spirit continues, and that when we get to the  
11 end of the planning process we have a plan that  
12 really does hit all the needs that the government  
13 has and that the country has.

14 With that, we are running short on time.  
15 I'm going to turn it over to our Dr. Mo. There's  
16 a Dr. Mo over at HHS and we have one here as well.  
17 They know each other which is good, so I'll turn  
18 it over to Mohit Kaushal to wrap up for today.

19 DR. KAUSHAL: Unfortunately we've run  
20 out of time, but I'd like to thank the second  
21 panelists. Again I think everyone would agree  
22 this has been a very interesting day. We've only

1       scratched on some of the topics, but I'm looking  
2       forward to delve deeper in the next couple of  
3       months. Once again, thank you everyone for taking  
4       the time, and thank you everyone for participating  
5       here as well.

6                       (Whereupon, the PROCEEDINGS were  
7                       adjourned.)

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